

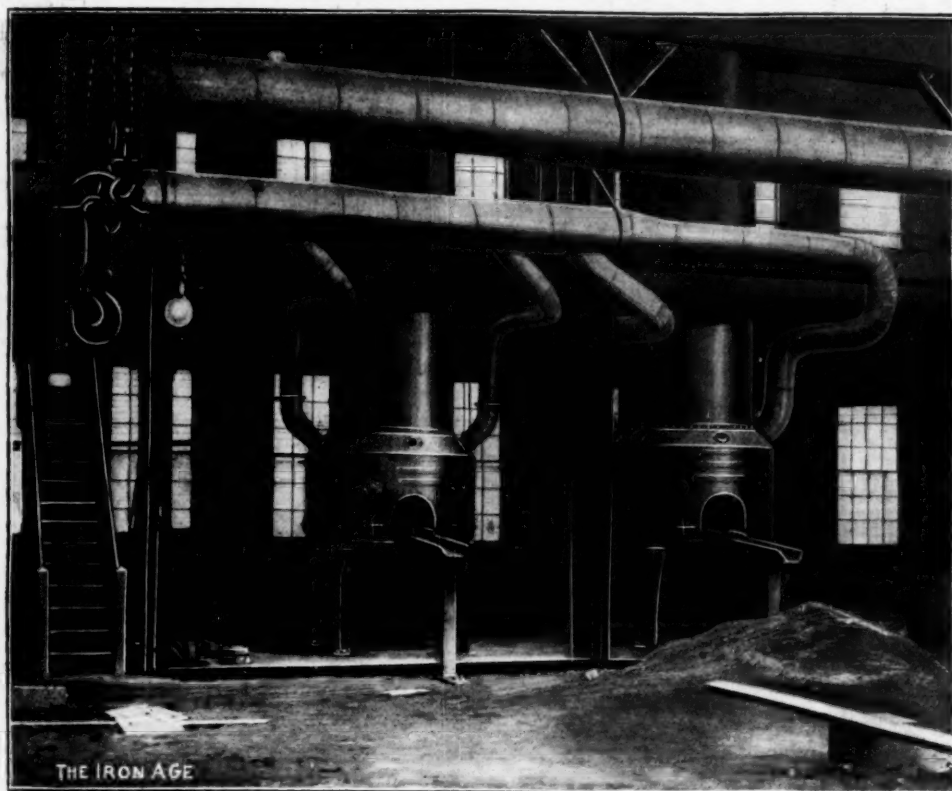
THE IRON AGE

THURSDAY, AUGUST 8, 1901.

New Foundry of the E. W. Bliss Company.

The new foundry recently completed by the E. W. Bliss Company of Brooklyn is admirably arranged in every respect. It was made necessary by the increase in the business of the company and by the introduction of certain machines requiring castings of massive proportions, which it was difficult to obtain within a reasonable distance of the works. The new plant is of such capacity as to easily handle all the work of the company, both large and small, and also to fill outside orders. For this reason it will be welcomed by other manufacturers

tons. Along the east side are seven jib cranes having a swing of 14 feet and arranged so as to overlap. These cranes were designed and built by the company, and possess features of interest. Their construction will be understood from Figs. 8, 9 and 10. The post is 14 feet 10 inches high and is pivoted top and bottom alongside one of the building columns. One crane is pivoted to each alternate column, the boom being of such length as to just clear the adjacent columns. The boom is built of two channel beams, spaced so as to permit the trolley to hang between them. The trolley consists of four flanged wheels, Figs. 9 and 10, arranged in pairs so as to travel on the boom. One pair of wheels is provided with a rope sheave, by means of which the trolley is



NEW FOUNDRY OF THE E. W. BLISS COMPANY.

of Brooklyn and New York who use castings weighing many tons.

The Building.

The building is of brick and iron construction, 116 feet wide by 200 feet in length. The main portion is 62 feet from center to center of the columns and 32 feet in height to the bottom of the roof trusses. The two wings are 27 and 28 feet wide, the latter, shown in the elevation, Fig. 3, and in the cross section, Fig. 7, being two stories in height. In the former are the core ovens, tumbling barrels, and so on. The two floors of the latter are occupied by machine tools. In the center of this side are the two cupolas, and at the rear end the boiler and engine, blowers, heating and ventilating apparatus and dynamos.

The building is very well lighted upon all sides. In the roof are side lights in large fixed and swinging sashes and three skylights of ample size, as indicated in Fig. 4. There are also four 48-inch ventilators.

The Equipment.

Traversing the central portion are two electric cranes having a span of 60 feet and a capacity of 15 and 30

tons. Each crane is furnished with a differential chain twist.

As stated, the cupolas are situated at the center of the west side. They are 49 and 43 inches in diameter and have a capacity of 10 to 12 and 7 to 9 tons per hour respectively. The store bins are placed in vaults beneath this part of the building, an elevator conveying the material to the charging platform, which is shown in Fig. 6.

The front view of the cupolas, Fig. 1, also shows the blast and ventilating pipes.

The Ridgway Dynamo & Engine Company.—Owing to the great increase in their business the Ridgway Dynamo & Engine Company, Ridgway, Pa., decided on May 1 to increase their capital stock to enable them to enlarge their works. As a result of this they are now erecting additional buildings, which will be nearly double the dimensions of the old. The whole plant, when finished, will cover about 2½ acres of land. All will be equipped with the most modern machinery and tools, and the capacity of the works will be considerably more.

than double what they are now. The new buildings will be constructed of steel, with brick walls, and include large additions to both the machine shop and foundry, together with a new boiler house complete. The latter will be furnished with elevators and storage bins for the keeping of large quantities of coal. The new ma-

types, a specially designed boring mill for cylinders and engine beds, and specially constructed milling machines for various operations on engines and generators. It also embraces a large electrically driven air compressor, hydraulic press, &c. The company are erecting a new office building of brick, which will possess ample fa-

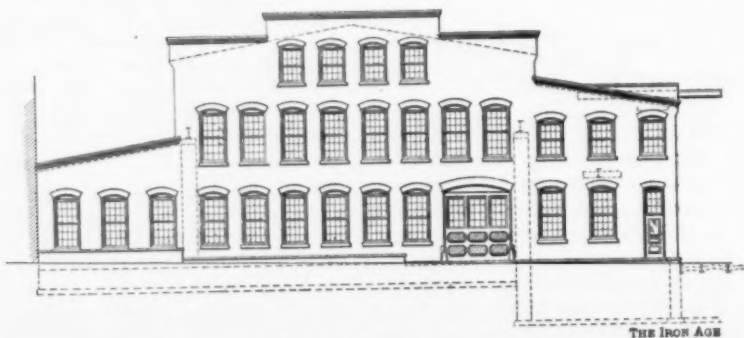


Fig. 2.—Front Elevation.

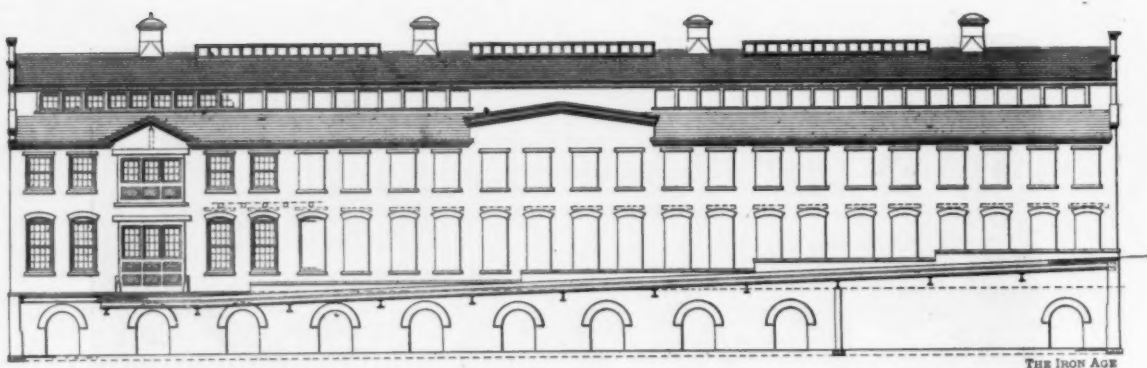


Fig. 3.—Side Elevation.

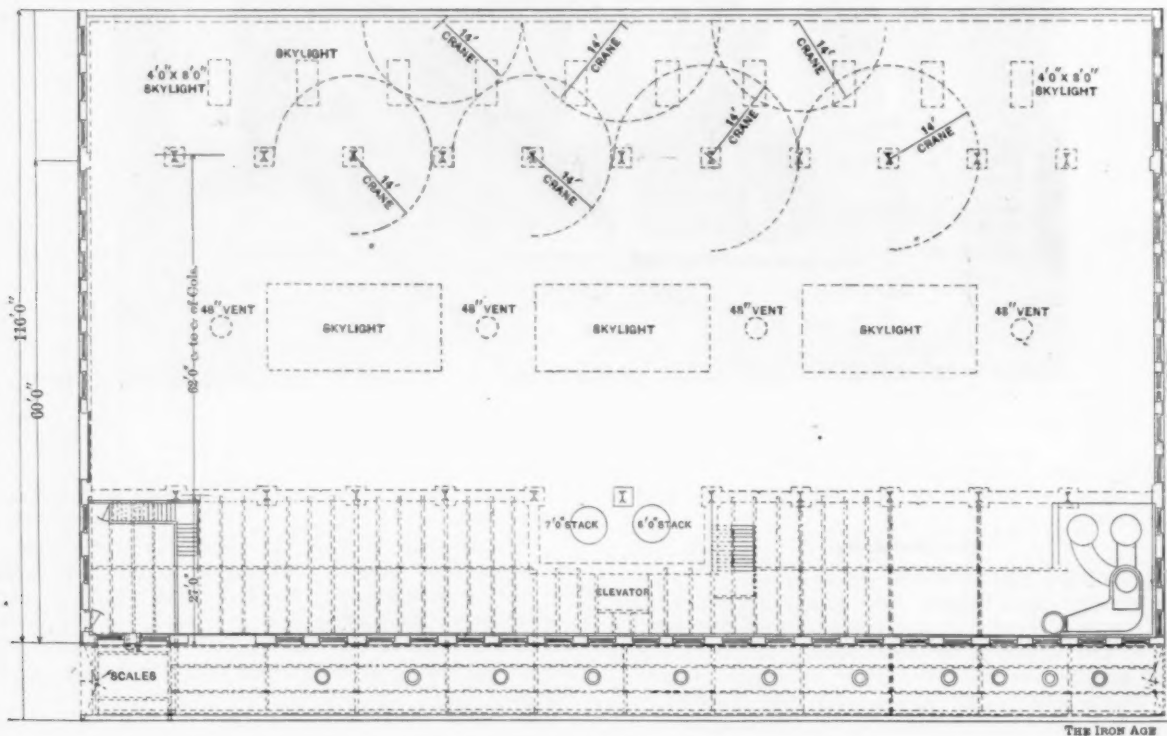


Fig. 4.—Plan.

NEW FOUNDRY OF THE E. W. BLISS COMPANY.

chinery includes five electric cranes, three in the machine shop and two in the foundry, a new power plant complete, which embraces 500 horse-power of water tube boilers, with brick stack, one engine and generator of 300 kw., and a second engine and generator of 100 kw. The tool equipment includes, besides a variety of lathes, boring mills and milling machines of ordinary

cilities for conducting the commercial and drafting departments of their business. The basement of the building will be fitted up as an electrical laboratory for testing and research under the direction of Milton E. Thompson, head engineer of the company. The additions are now well under way and it is expected the enlarged works will be in full operation by the middle of October.

A Conference on the Federal Bankruptcy Law.

WASHINGTON, D. C., August 6, 1901.—Negotiations which have been on foot for several weeks have now been practically completed looking to a conference in New York early in September between E. C. Brandenburg, in charge of bankruptcy matters in the Department of Justice, and representatives of the Merchants' Association of New York, the National Credit Men's Association and the National Referees' Association concerning the propriety of amending the Federal Bankruptcy act at the coming session of Congress, and especially with reference to the proposed repeal of section

the desirability of this section in particular. In summing up the results of his tour he said to the correspondent of *The Iron Age*:

"Owing to the apparent diversity of opinion with reference to the action Congress should take concerning the repeal or amendment of section 57 (g), I devoted considerable time during my tour of the West to inquiries concerning the practical operation of this section in that region, and although I pursued the same subject with considerable diligence I found but a single individual—an attorney residing in Denver, Col.—who favored the repeal of this provision, and I subsequently discovered that he was opposed to any bankruptcy law. The opinion was practically unanimous that this section as construed by the court is the keystone of the entire struc-



Fig. 5.—Side Sectional Elevation at Cupolas.

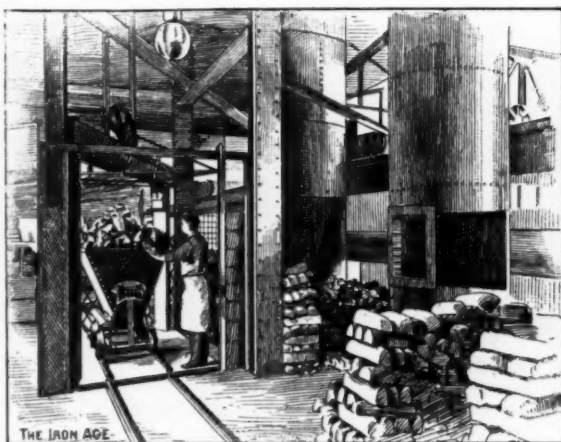


Fig. 6.—Charging Platform.

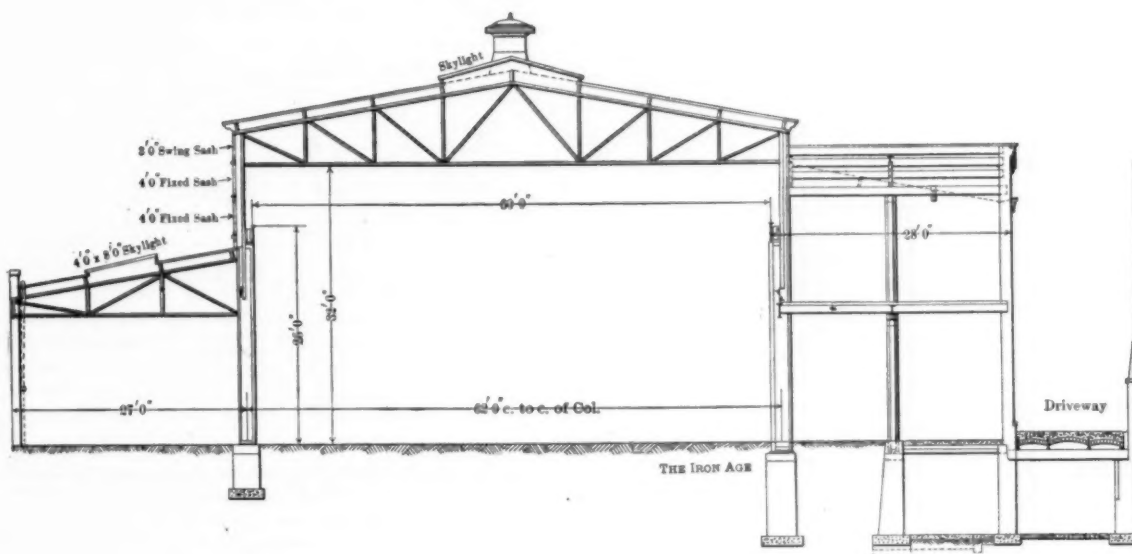


Fig. 7.—Cross Section.

NEW FOUNDRY OF THE E. W. BLISS COMPANY.

57 (g), which, as construed by the United States Supreme Court in the Carson, Pirie, Scott & Co. case, requires the surrender as improper preferences of all payments made by debtors within four months of the filing of petitions in bankruptcy.

This conference is the direct result of the publication of the announcement that the Attorney-General, after careful consideration of the court's decision, would not recommend the repeal of section 57 (g). The matter was promptly taken up by the Merchants' Association, which desires the repeal of this section, and considerable correspondence with Mr. Brandenburg followed. Mr. Brandenburg has since made an extended Western tour, largely for the purpose of sounding the sentiments of all classes on the operation of the law in general and

ture, and if the law is amended by permitting the retention of payments on account and the recovery of further dividends the door will be left open to the same class of frauds as existed under the State laws, and the creditors will be absolutely at the mercy of debtors with dishonest inclinations. My inquiry was not restricted to any particular class, and among both lawyers and merchants I sought out those representing creditors as well as debtors.

A Remedy Suggested.

"In this connection I would like to suggest a remedy which it has occurred to me may meet the most serious objections that have been raised against this much discussed section. Under the present construction of the law the creditor is compelled to surrender his payments

an account as a condition precedent to present his claim for the balance due from the bankrupt's estate. There can be no doubt that this works a hardship, for, in the first place, it takes from his capital the amount of the payment on account which must be surrendered, and ties it up by turning it over to the trustee, who retains it until the dividend is paid; and, second, the creditor

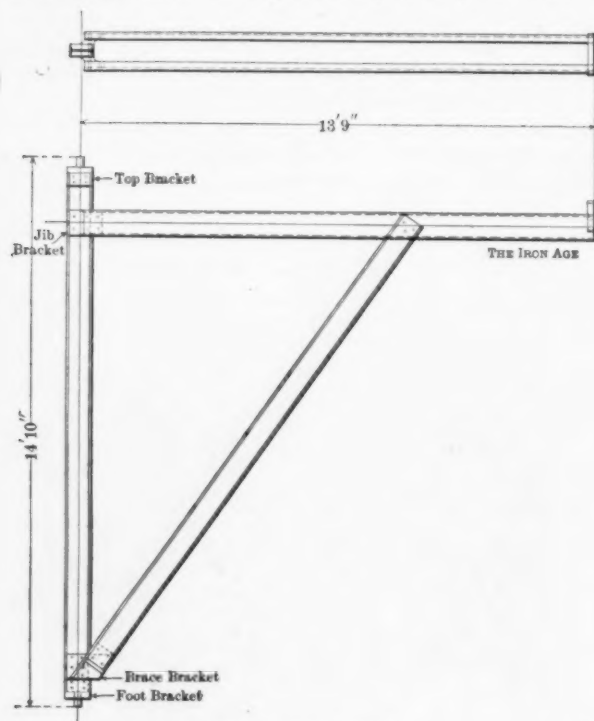


Fig. 8.—Jib Crane.

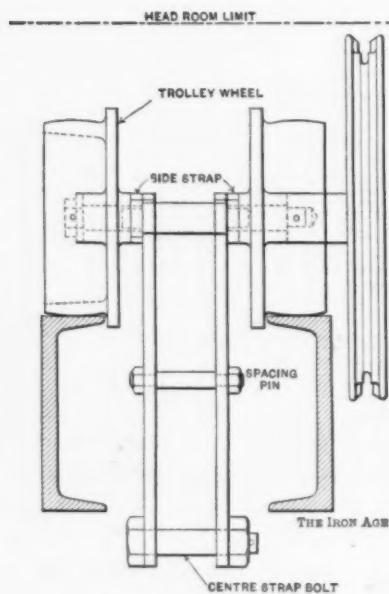


Fig. 9.

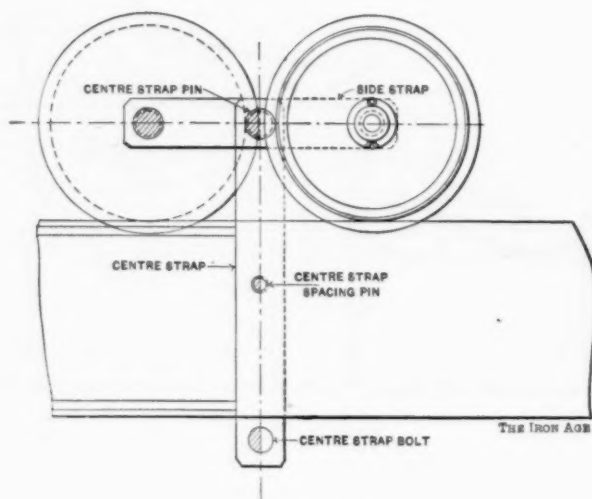


Fig. 10.

Details of Jib Crane Trolley.

NEW FOUNDRY OF THE E. W. BLISS COMPANY.

must necessarily take a gambler's risk as to whether or not the dividend ultimately received will more than equal the amount of his payment on account. In spite of the publicity of the bankruptcy proceedings, it is impossible to foreshadow the probable dividend of any estate. Litigation may take a large part of it; additional creditors may appear at the last moment, and there is even the possibility that a trustee may misapply the funds and his bond be found defective.

"To meet these difficulties I suggest that section 57 (g) be so amended as to permit a creditor to retain his payments on account, prove his claim for the balance

due from the bankrupt's estate, but to receive no dividend thereon until the creditors who have not been so preferred receive dividends equal to the amount which he has had in the shape of payments on account, after which the balance of the estate may be distributed *pro rata*. Such an amendment, it seems to me, would avoid the chief hardships complained of. The creditor would be able to keep his payments on account in his own hands until convinced as to whether it would be to his advantage to surrender them and share equally with other creditors in the estate, and at the same time other creditors would be protected against the injustice of being obliged to share with one who has received large preferences from an estate inadequate to meet the claims against it. If the law were amended as I suggest the creditor who has received a payment on account would be no longer in the dark, but would retain what he has received, prove up his balance, and receive his share of the residue of the estate after each creditor had been paid an amount proportionate to that already received by him from the bankrupt in advance of the formal proceedings.

"The more attention I give to the subject the more perfectly convinced I am that all payments made by a debtor if he becomes insolvent should be treated in the spirit of the bankruptcy law—that is to say, as disbursements from the bankrupt's estate, and the beneficiaries of such payment should be obliged to consider them in the light of dividends.

"With regard to the general operation of the law in the West, I was much gratified to find that everywhere it has been received with manifestations of approval. The bankruptcy courts, the referees and the business men alike declare the law to be of incalculable benefit and a great advance over the old State insolvency laws. The slight friction due to misunderstandings concerning

the proper construction of various provisions which naturally accompanied the inauguration of proceedings under so comprehensive a measure has entirely disappeared, and throughout the West bankruptcy tribunals appear to be operating with clock work precision.

"I shall be very glad to take up the subject of the amendment of the law with the prominent business men of New York, and others who have kindly expressed a desire to confer with me. Although I have very positive views on some of the points involved I trust I am open to conviction and I hope that much good will come of a free and frank exchange of views." W. L. C.

The Philippine Tariff.

WASHINGTON, D. C., July 30, 1901.—The new Philippine tariff was forwarded to Manila on the 25th inst., in the custody of a customs official, who will sail from San Francisco on August 1, arriving at Manila about September 1. The new schedules will be submitted to the Philippine Commission at once and the department will be notified by cable either of the approval of the tariff or of suggested changes. It is estimated that not over ten days will be required to settle all points at issue, and the Commission will then be instructed by the Secretary of War to formally promulgate the schedules without further delay and they will be made public simultaneously in Manila and Washington, probably about September 15. The department had contemplated delaying formal promulgation until the meeting of the Supreme Court, which is expected to hand down in October its decision in the pending case involving the constitutionality of the levying of duties on commerce between the United States and the Philippines, but the demand for the revision has been so strenuous on the part of importers and merchants in the islands that the Secretary of War does not feel justified in longer holding the matter open.

A provision has been incorporated in the amended tariff providing that "merchandise in transit at the time the present revision goes into effect may be entered under the provisions of law existing at the time of shipment; provided, however, that this privilege shall not be extended beyond the period of 60 days after the date of the enforcement of the present tariff of duties and taxes." Merchandise in bond at the time of the taking effect of the new tariff will be permitted to be withdrawn at the old rates, if desired, at any time within 60 days; otherwise goods taken out of bond will pay the new rates. This provision is intended to prevent hardships growing out of the taking effect of the revision without notice.

Great care has been exercised in framing the new tariff to observe all the forms of a temporary military measure. The Supreme Court in deciding the Porto Rican cases justified the levying of duties on imports into Porto Rico prior to the cession of the island while it was under exclusively military control as a military necessity, and while the status in the Philippines may be held by the court to have been modified by the treaty of cession, yet it is considered advisable to preserve military forms wherever possible. Hence the new tariff will be promulgated in the form of an amendment and will be preceded by the following statement:

"By the authority of the President of the United States and with the approval of the Secretary of War first had, be it enacted by the United States Philippine Commission: The provisions of General Order No. 49, office of the United States Military Governor in the Philippine Islands, dated October 23, 1899, relating to customs on imports and exports of the Philippine Islands, and tonnage duties and wharf charges therein, and the several orders supplemental thereto and amendatory thereof, are hereby amended to read as follows, &c."

There have been no changes of importance in the metal schedule since the original draft was published in *The Iron Age* of March 7; except that, as heretofore stated, provision has been made whereby highly wrought articles dutiable by weight shall pay a minimum of 15 per cent. ad valorem. This provision applies to needles, pins, cutlery of all descriptions, wrought iron or steel articles polished, enameled, coated with porcelain, zinc, nickel, &c.; manufactures of copper and its alloys and manufactures of zinc, lead, &c., and their alloys. The rates of the revision are almost uniformly lower than those now in force and a special effort has been made to so arrange the schedules as to provide for the importation at moderate duties of such machinery, building materials, &c., as will be required in the early development of the islands.

The issuance of the President's proclamation on the 25th inst., establishing free trade between the United States and Porto Rico, has been construed by the Treasury Department for the benefit of customs officials, importers and exporters as removing all duties on merchandise withdrawn from bond after midnight of July

24. In addition the Treasury has rendered a decision to the effect that goods in bonded warehouse upon the taking effect of the free trade proclamation might be withdrawn without payment of duty regardless of the date of importation. Thus goods which had been in bonded warehouse for an indefinite length of time might be entered for consumption free of duty after taking effect of the proclamation. Merchandise now in bond, no matter when imported, may be withdrawn free of duty.

The Cuban Tariff.

The Secretary of War is advised that a joint commission engaged in framing a new Cuban tariff has completed its work and has referred the new schedules to Collector Bliss of Havana in order that they may be scrutinized with reference to their revenue producing power, the Department having decided that at least \$15,000,000 per annum must be raised by import duties to provide for the new insular government. In this connection a strong tendency has been developed on the part of the Cuban members of the joint tariff commission to increase the rates on schedules covering goods largely produced in the United States, and this tendency is traced by War Department officials to the desire on the part of the Cubans to force the United States to negotiate a reciprocity treaty as soon as an independent government is established in the island. The Cubans are very desirous of securing reductions in the Dingley rates on sugar and tobacco imported into the United States from the island, and they argue that the best method of obtaining these concessions is to increase the rates on American products and thereby secure the co-operation of American manufacturers who are anxious to retain the Cuban market. No reliable information has been received here with regard to the new rates, but the secretary of War expects the American representatives on the commission to oppose unreasonable rates and to guard against any discrimination the Cubans may desire to incorporate in the tariff for "trading" purposes. W. L. C.

The Canadian Niagara Power Company.—The Canadian Niagara Power Company have appointed Cecil B. Smith, late assistant city engineer of Toronto, Ont., to be resident engineer of that company, and he will have charge of the new power development on the Canadian side at the falls. A. Monro Crier of Toronto has been appointed resident solicitor of the company, and he will be located on the Canadian side at Niagara. The shaft that is being sunk preparatory to the tunnel construction has reached a depth of nearly 100 feet. This part of the contract is being done by A. C. Douglass of Niagara Falls, N. Y. Within a few days it is the announced intention of the Canadian Niagara Power Company to invite proposals for the construction of the first section of their proposed wheel pit. The length of this initial section will be about 250 feet, while its approximate depth will be 200 feet. Between this wheel pit and the gorge of the lower Niagara River a tunnel having a length of about 2200 feet will be constructed. The section of this tunnel will be somewhat larger than the section of the tunnel of the Niagara Falls Power Company on the New York side, but it will have a length less than one-third that of the New York side tunnel, which will greatly lessen the cost of construction. Both the wheel pit and the tunnel will be lined with brick throughout. It is understood that the entire capital necessary for the construction of the work has been oversubscribed, and that an allotment of debentures was made a few days ago.

A Large Order for Pneumatic Tools.—The Chicago Pneumatic Tool Company have just received through their foreign office the largest single order for pneumatic tools ever placed with them, and probably the largest ever placed, consisting of 1525 tools, as follows: 275 Boyer long stroke hammers; 350 No. 1 Boyer chipping and calking hammers; 400 No. 2 Boyer chipping and calking hammers; 25 No. 000 Boyer extension riveters; 25 No. 000 Boyer yoke riveters; 25 1½ x 6 inch Boyer yoke riveters; 150 No. 2 Boyer drills; 250 No. 3 Boyer drills, and 25 No. 4 Chicago breast drills.

The Design of Angle Rolls.—I.

BY WILLIAM HIRST, TRENTON, N. J.

There are few forms of passes between rolls in which a bar can be reduced evenly—that is to say, where the draft can be applied proportionate to the thickness of the different parts of the section. The length of a bar increases as the area of its cross section decreases, and as the increase in length must be coextensive in all its parts it follows that if one part is subjected to a heavier

stead of the reduction causing an equal elongation of the bar the displaced metal flows to the hotter and softer side, which is consequently lengthened more than the colder, which causes the bar to bend toward that side. In short, a bloom or pile unevenly heated acts the same as an unequally disposed draft. In some cases, owing to a great difference between the diameters in certain parts of the section, and often in regular sections, such as flat bars, the flow is drawn through the rolls and forced into the bar as it leaves them. To make this more clear, if a section, say a flat, is entered into

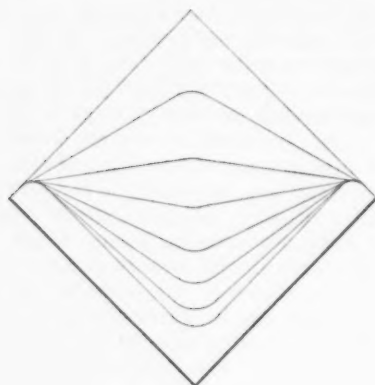


Fig. 1.

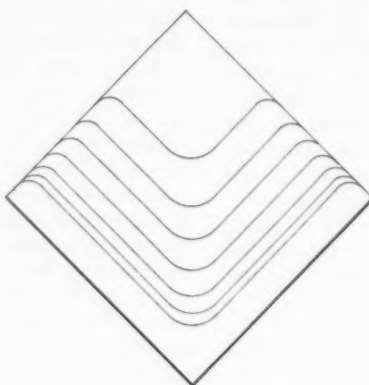


Fig. 2.

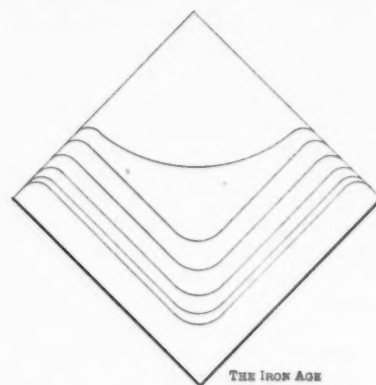


Fig. 3.

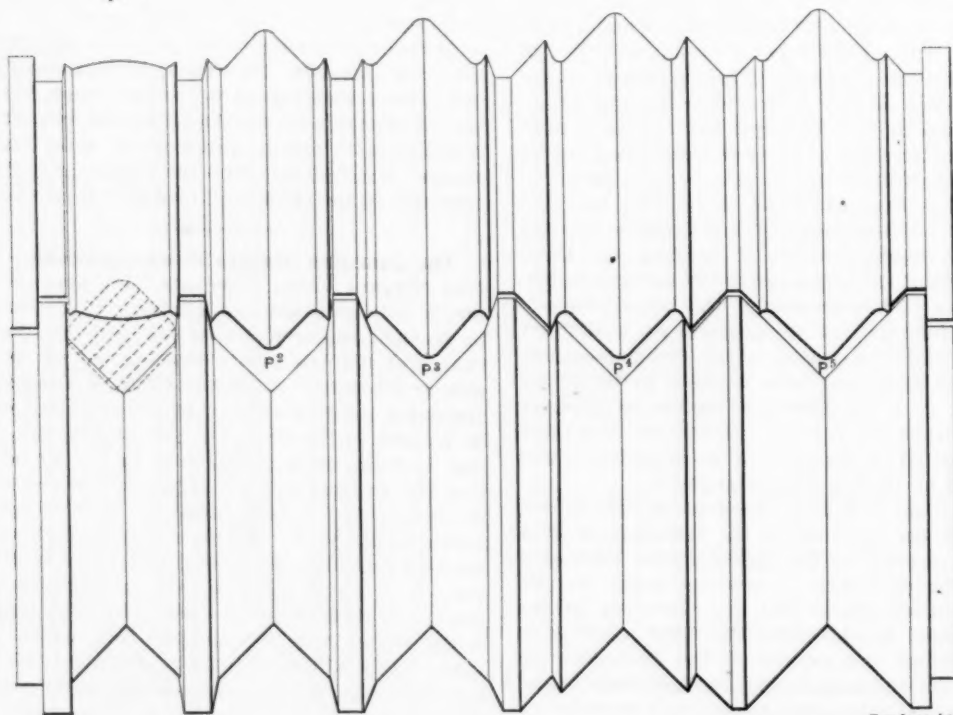


Fig. 4.—Angle Made from a Square Billet.

THE DESIGN OF ANGLE ROLLS.

draft than another the metal must flow into that part having the least to equalize it, so that the increase in length may be concurrent. Should this flow be obstructed or prevented by an angular or other unfavorable shape of section, or by the bar being too cold, it will bend in a direction away from that part having the heaviest draft. Should the bar be kept straight by means of guards and guides the part having the least draft will be stretched or drawn out. If this stretching is considerable it either separates the fibers at the edges and corners of the bar or draws them down so that they fall short in size. Naturally the higher the temperature, the softer the metal, the more readily it will flow and equalize itself. A common illustration of this is in the conduct of a bloom or pile that has not been uniformly heated. When such a bar is entered into the rolls, in-

a pass with no room for lateral extension (spread) and the draft on all parts of the section even, the elongation of the bar will be even; if the same bar be entered into a pass allowing unlimited spread, the edges of the bar will extend laterally and the central portion longitudinally, making the elongation of the bar uneven; and if the metal is of a granular structure lacking in ductility, fiber not yet formed, the edges become separated, or to use the common term, cracked. Take for an illustration the muck bar; these unvariably crack and separate more or less at the edges, which is due to the greater elongation in the middle of the bar. When the metal has become fibrous and strong through repeated working, particularly in thin sections, the edges hold together and in a measure resist the longitudinal extension of the bar; and the extent of this resistance is shown by the

bar being thicker in the middle than at the edges, indicating that the flow of the metal has been drawn through the rolls and forced into the bar as it was leaving them. Out of a large number of samples of thin flats smaller than No. 14 gauge, not one was found but what was thicker in the middle than at the edges. These samples were both hot and cold rolled, and they showed variations sometimes amounting to 0.02 and always enough to be noticed. It might appear at first that this phenomenon was due to an unevenness in the surface of the rolls, but if this were the case the bar would sometimes be thin in the middle, and it would not be likely that both sides of the bar would be convex at the same time. Careful observation has led to the conclusion that this is due to the conduct of the metal in the rolls, and the most reasonable explanation is that the metal near the edges of the bar under the pressure of the rolls takes the outlet offering the least resistance, which is to spread laterally, and, as shown before, if spread takes place the elongation of the bar cannot be

the metal out of the pass and form on the bar a thin rib, technically termed a "fin," which is undesirable. To prevent these a due proportion of draft cannot be put at that place because the metal would be forced into the interstices. This makes it necessary to minimize the draft at that point and to balance it between that and other parts of the section so that the metal will not be forced out of the pass by too much at the opening, or be drawn away by not having enough. To do this a degree of skill is called for that cannot be acquired except from actual practice and a familiarity with surrounding conditions, which include the possible degree of heat that the metal will bear and the character of the material particularly. From these are deduced the probable extent to which the metal can be induced to flow from one part of the section to another. Every roll designer who studies the flow of metal between rolls knows that there are no two grades that flow alike, and that a difference in the degree of heat, even within the bar itself, makes it all the more variable. So much is this true that a de-

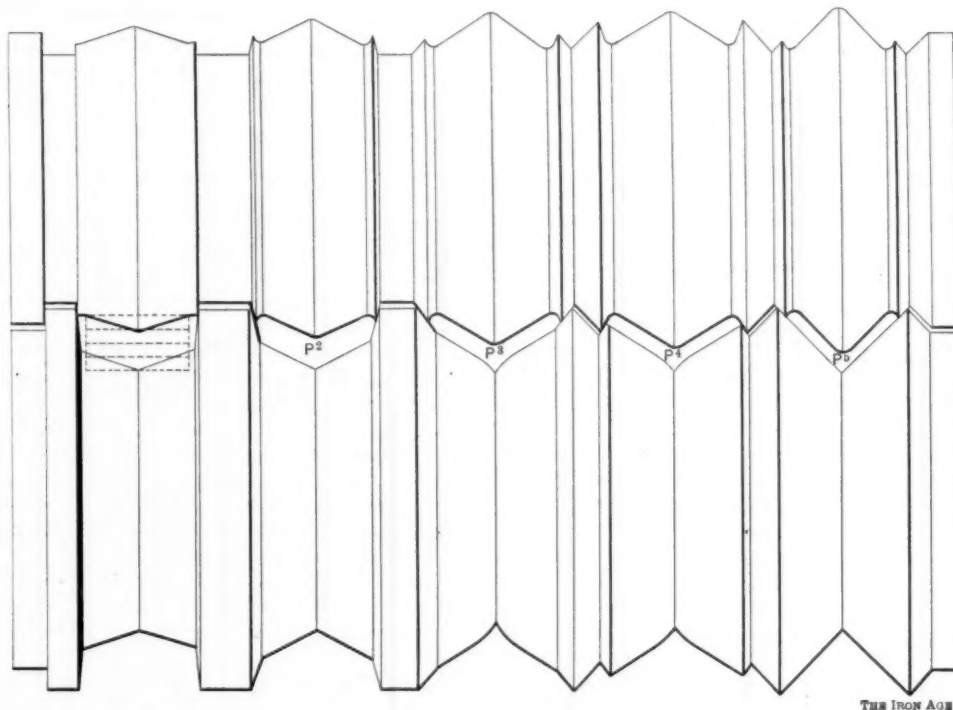


Fig. 5.—Angle Made from a Flat Billet.

THE DESIGN OF ANGLE ROLLS.

coextensive unless the edges are drawn down, but when the metal is of high tensile strength comparatively the edges offer some resistance to being stretched or drawn and the effect of this resistance is to cause the bar to be upset in the center. A noteworthy fact is that the higher grades of steel show this the most.

The Prevention of Fins.

In rolling any form of section an important detail is to so arrange the passes in the rolls that the corners of the bar at the interstices between the rolls in one pass shall come in contact with the roll in the next. With sections having four sides parallel and at right angles to each other and two of them at right angles to the axes of the rolls, such as flat bars or with any section that can be turned quarter way round, this is comparatively easy, but where the shape of the section does not admit of its being so turned, and whose sides are oblique to the axes of the rolls and meet at a common point, the case is difficult and one that requires considerable skill to apportion the draft so that the passes will not be over filled, nor yet lack so much that the finished bar will not be true to its pattern. It sometimes happens, as in the case of closed passes in general which are formed by a groove in one roll which is closed by a projecting collar on another, that the pass is open in the direction in which the draft is effected, making it possible to force

sign working well in one place cannot be guaranteed to work equally well in another unless the conditions are known to be practically the same, and the more this is appreciated the more hesitancy there is to make definite statements as to how metal will act in the pass.

The Form of Passes.

In a series of passes for angle rolls generally in vogue now the greatest draft is in the middle of the pass, and were the passes laid out as in Fig. 1 it would be all there. In the first three or four passes the metal would be forced to flow to the sides, but in the last the extreme edges must be drawn down, perhaps resulting in producing cracks, a result which would depend on the quality of the metal. To make the draft as nearly proportional as possible the passes might be laid out as in Fig. 2, but by taking advantage of the flow while the section is thick and hot a compromise can be made as in Fig. 3, which will be highly efficient and produce a practically perfect bar, as far as the distribution of draft is concerned. It will be seen that within these extremes there may be much variation in the forms of the passes according to the ideas of the different designs, some of which may approach close enough to Fig. 1 to produce imperfectly formed and drawn edges, while others may be nearer Fig. 2, but the medium skillfully constructed will embody all the good features that both may possess.

In early designs of rolls for making angles in the days of two-high mills the passes were set in the rolls in such relation to each other that if they were filled up it would be impossible to prevent fins. They were so arranged that the bar went through each the same side up, not being turned over, as was the rule in common practice. As it is a practical impossibility to so fit the collars in their respective grooves that there will be no space between them, it follows, should the pass be filled out, that the draft will force the metal into them, thus forming the fin, which, in this way of setting the passes, could not be rolled in again or regulated because the bar is entered into the next and succeeding passes in the same relative position and the fin is forced further between the collars. Figs. 4 and 5 show the best forms of these passes, Fig. 4 making the angle from a square and Fig. 5 from a flat pile or billet. In Fig. 4 the angle of each pass is 90 degrees, in Fig. 5 the first pass is a very obtuse, technically, a "wide" angle, each succeeding pass closing up—that is, approaching the last, which is 90 degrees. Should the draft force the metal between

out the last pass. This practice carries two serious disadvantages with it—namely, that it does not allow draft enough at the edges of the bar and that if the billet was not entered and kept exactly in the middle of the pass one of the legs would be shorter than the other, an occurrence which is not now altogether unknown.

Insufficient draft at the edges meant cracks in those—or these—days, when iron was the metal, and so common was this that to make angles it required that the best grades of stock must be used. In many designs of the older two-high rolls, of which Figs. 4 and 5 are improved types, the sides of all the passes in the series were carried straight out like those of pass 5, without the more or less abrupt turn upward, as in passes 1 to 4. This angle in the side of the pass, beginning at a distance less than the length of the leg of the finished bar, is carried straight up almost with just enough bevel to free the bar in the first pass, and by throwing this side over, each succeeding pass was made wider somewhat, which makes the top roll collar overlap or to cover the corner made in the preceding pass. While not permit-

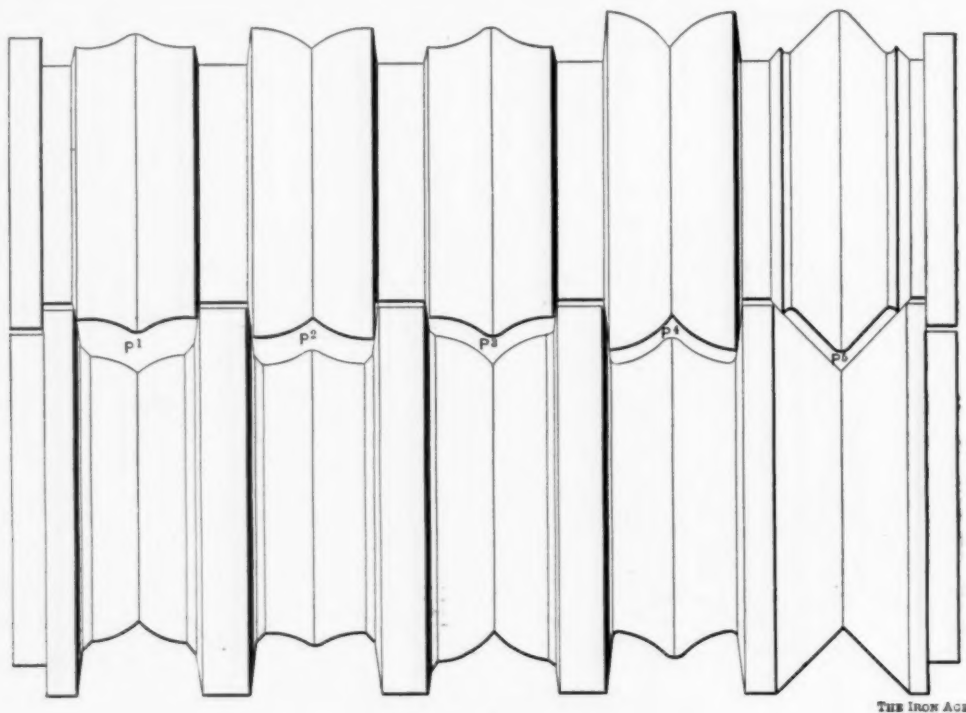


Fig. 6.—The Lewis Design.

THE DESIGN OF ANGLE ROLLS.

the collars, which is almost certain to happen if the first pass is filled, it could not be regulated, as it will be seen that in this design the same corner of the bar comes to the opening between the collars in three successive passes, so that a fin so formed could not be rolled in and the corner rolled off to prevent its recurrence. In the series of passes shown in Figs. 4 and 5, while the lengths of the legs in each are the same, the openings between the collars are made further from the center of the pass than those preceding by increasing the bevel of the sides, which allows a slight lateral expansion at that point. In the fourth pass, Fig. 4, the collars are reversed to change the direction of the opening; and that this pass may not overfill, the draft at that part of the section where the entrant collar comes in contact with the bar is relieved by the fillets in the corners of the preceding passes, which are formed by the beveled sides of the pass. Thus if the billet no more than touches the sides of the first pass it is not likely that a fin will form in the others, and the reversed collars of the fourth pass make it possible to fill that one without marking the finished bar.

In working a series of passes with the collars of all the passes set in the same direction, as in the old way, a common expedient to prevent overfilling was to decrease the size of the billet until it was barely enough to fill

ting each pass to be filled up completely, yet there was greater opportunity to produce a more uniform section than in any other two high-rolls that work the bar through the series without turning it over. With all the passes made with sides all straight out like pass 5, there was no way at all to be reasonably sure of preventing fins except by decreasing the size of the billet, with its disadvantages as before stated, and which made the lengths of one or both of the legs very irregular, but the series of passes shown in Figs. 4 and 5 may be filled out much more, giving assurance of regularity and better results generally.

Early Forms of Passes.

The earliest forms of passes were laid out on the principle illustrated in Fig. 2 and 3; the sides of the pass forming the outside of the angle were carried straight out without any angular formation in the way of fillets to regulate the corners. The billet, made from a pile of muck bar, was entered as shown by the dotted lines in the first pass of Fig. 4. In this it will be noticed that the plates forming the pile lay parallel to one leg and at right angles or edgewise to the other. It was found that in attempting to bend or punch the latter it frequently broke or split, owing to the imperfect structure—a separation of what might be called streaks which cor-

respond to the drawn out plates of the original pile. To obviate this and to improve the passes so as to work lower grades of stock with greater efficiency, a Mr. Lewis of the firm of Lewis & Rossiter invented and had patented a series of passes on the principle of which those of Fig. 6 are laid out. These appear to be generic of those in Fig. 5, which in a modified form had been in use in Europe for many years, but were, nevertheless, a great improvement in that the bar could be turned over alternately to regulate the corners which came opposite the opening between the collars to prevent fins and which permits each pass to be filled out to make the draft as near proportional in the different parts of the section as possible. These passes were also more easily adapted to three-high trains and have been extensively used, but modern practice has improved those shown in Fig. 4 and adapted them in preference to the curved form of Fig. 6. The curved form, however, has good points which appear well in comparison with the form now generally used and which are appreciated more when their construction is better understood.

Turn Over Passes.

In closed passes, the kind used for rolling angles, the roll which is grooved to form the pass is termed the "collar" roll, the roll on which are turned the collars fitting into these grooves is termed the "forming" roll, and the recesses or grooves between the collars on this roll are referred to as collar grooves, often mis-called "collar holes." In rolling out any section the forming collar will press deeper and effect a greater change in section than is possible by the grooved or collar roll, and to take advantage of this where the greatest change in section is to be made on one side the bar is turned over one or more times to present that side to the forming roll collar, and the pass that requires the bar to be turned over is called a "turn over pass."

Turning a bar over during the operation of rolling entails considerable labor, is often difficult and attended with delay. To design rolls which require the bar to be turned over as few times as possible, or to avoid the necessity of so doing altogether, is very desirable. To do this in two-high rolls, and at the same time provide absolutely against fins, the passes would have to be set the same side up as in Figs. 4 and 5, but would require that the collars be reversed alternately—that is, that the groove would be in the bottom roll with the forming collar on the top for one pass and the groove in the top roll and the forming on the bottom similar to passes 3 and 4 in Figs. 4 and 5. This would have the same effect as turning the passes over as in Fig. 6. It should be remarked here, however, that in angle rolls, unlike most other sections, there is but little or no difference in the effect of the forming collar and its co-operating groove, and the object in reversing the collars or alternately setting the passes opposite side up is only to regulate the corners which come opposite the space between the rolls.

Rolling on Three-High Trains.

In the three-high system we get the same result as by alternately arranging the passes opposite side up or by reversing the collars as in the manner above stated. For angle rolls, in common with most other sections, unless for some exterior reason, it is comparatively easy to avoid the necessity of turning the bar over. For angle rolls particularly, the top and bottom rolls are usually turned exactly alike and are, therefore, interchangeable, a feature which lengthens the life of a set of rolls considerably, and in addition to the well-known fact of their greater productive capacity over two-high trains is their superior economy and their facility in the production of longer bars by reason of their almost continuous working while the heat is in the bar.

The sizes of standard angles are listed from 6 x 6 inches to $\frac{3}{4}$ x $\frac{3}{4}$ inch, even and uneven legs, varying in thickness from $\frac{7}{8}$ to $\frac{1}{2}$ inch. Each size of angle is produced in different thicknesses varying by 1-16 inch, the 6 x 6 inch having eight thicknesses, the smallest two 3-16 and $\frac{1}{8}$ inch. Although alike in section and in general demanding the same treatment in the rolls, including all special sizes, it may be said that no one method of design, distribution of draft or arrangement

of passes will do for all. Some sections are required to be extremely light, some extremely heavy for special purposes, some of unusual inequality in the length of the legs.

Roll trains have different arrangements; some require that the bar shall be made and finished in one set of rolls; some divide the passes into two or more sets in order that more hands may be employed so as to have several bars in the train at one time, in accordance with the idea of increased production. For this reason only the main features of the design and the principal details of these rolls can be given; in general the adaptation to local conditions and requirements must, or should, always be left to the judgment of those in touch with the work. It may not be out of place to add here that there are exigencies arising from the peculiarities in the working of a train, and often of the men themselves, which can best be considered and used to advantage by those who are most familiar with such. In all cases due consideration should be given, particularly to the size and power of the train, and the adaptability of the appliances that are to be used with the rolls, so that all may work for the common end—the efficient and economical production of the bar. In considering these points there is often a divided responsibility, and in such cases it not infrequently happens that a train has to be rearranged to suit a set of rolls, or the rolls have to be modified, detrimentally, to suit the train. A condition of this kind is a mistake, both in theory and practice, and the disadvantage of such should be apparent.

The Dithridge Steel Car Company.—The Dithridge Steel Car Company are about to build a plant at New Comerstown, Ohio, for the manufacture of steel freight cars, under the Dithridge patents. A site of 50 acres has been secured on the Panhandle Railroad and Ohio Canal, and the plant will include a rolling mill for the Dithridge patented sections, a steel casting foundry, a wheel foundry, a machine shop, equipped with modern tools, an axle forge, and all other necessary conveniences for the production of these cars. The first work that will be done is the installation of a pair of horizontal turbines, connected with two 50-kw. generators, for the purpose of supplying current for light and for operating motors required in construction work, cranes, &c., and the handling of materials. The headquarters of the company are at 70 Montgomery street, the officers being Geo. W. Dithridge, president, and R. L. Wolterbeck, secretary and treasurer. The White Improvement Company, of whom J. L. White is president, have acquired 1200 acres of land at New Comerstown and control 800 acres more.

Arrangements have been made to transfer the entire capital stock of the Chicago Brass Works, at Kenosha, Wis., to A. A. Cowles of New York, E. L. Frisbie of Waterbury, and Jas. A. Doughty of Torrington, Conn. These gentlemen, together with Chas. F. Brooker and John P. Elton, constitute the Executive Committee of the American Brass Company of Waterbury, Conn., and it is assumed that the purchase is made in the interest of the American Brass Company. The consideration paid for the stock is not stated, nor is it known what changes or improvements will be made in the plant. No doubt it will be operated in harmony with the interests of the American Brass Company. The Chicago Brass Company was founded about 15 years ago, and their business has steadily grown until it is now so great that it may be deemed desirable to enlarge and improve the plant.

The Hawley Down Draft Furnace Company, Huron and Townsend streets, Chicago, have submitted a proposition to the city officials to remove the boilers in the City Hall of Chicago and install boilers equipped with their down draft apparatus, taking as payment the saving in the cost of fuel for a year. The power plant now in use burns anthracite coal and is not adequate for the service required. The company propose to furnish an equipment which will satisfactorily consume bituminous coal, not only providing the necessary power, but avoid-

ing the production of smoke, which would be seriously objectionable. It is expected that this proposition will be accepted, as it only awaits the approval of the Controller.

The Production of the Cuban Iron Ore Mines.

Our Imports and Exports of Iron Ore.

WASHINGTON, D. C., August 6, 1901.—An interesting statement concerning the development of the iron ore mines of Cuba and the importations of iron ore from that island and from other sources has been added to the annual report upon the production of iron ore in 1900, compiled by John Birkinbine of Philadelphia, a synopsis of which was recently printed in *The Iron Age*.

As the development of Cuba is of general interest, and as most of the iron ore obtained in Cuba finds a market in the United States, the following table is presented. It indicates the quantities of ore shipped each year by the companies which have been contributors:

Year.	Juragua Iron Company.	Sigua Iron Company.	Spanish-American Iron Company.	Total.
	Long tons.	Long tons.	Long tons.	Long tons.
1884.....	21,798			21,798
1885.....	81,106			81,106
1886.....	111,710			111,710
1887.....	97,711			97,711
1888.....	198,040			198,040
1889.....	256,278			256,278
1890.....	362,068			362,068
1891.....	266,377			266,377
1892.....	322,527	7,830		330,357
1893.....	348,863	14,022		362,885
1894.....	150,440			150,440
1895.....	311,053		74,991	386,044
1896.....	298,299		114,101	412,400
1897.....	*250,749		†206,812	457,561
1898.....	83,852		80,225	164,077
1899.....	161,707		207,051	368,758
1900.....	151,961		293,016	444,977
Totals.....	3,474,539	21,852	976,196	4,472,587

*5,932 long tons sent to Pictou, Nova Scotia. †51,537 long tons sent to foreign ports.

From this table it will be seen that the Juragua Iron Company, Limited (who made their first shipment of ore in 1884), have furnished the most of the ore to date, and also the greatest amount in any one year, but of late the Spanish-American Iron Company (who made their first shipment in 1895) have contributed a larger proportion. This latter company have been purchased by the Pennsylvania Steel Company, one of the joint owners of the Juragua Iron Company, and also interested in the Cuban Steel Ore Company, a new development, which up to the close of 1900 made no shipments, but which will be a producer in 1901, preparatory development work being well advanced.

The Sigua Iron Company were active in the years 1892 and 1893, but since that date the property has been unproductive.

The Juragua Iron Company, Limited, the Spanish-American Iron Company and the Sigua Iron Company deposits are all located in the southeastern portion of the island of Cuba, bordering on the Caribbean Sea east of the bay of Santiago de Cuba, while the Cuban Steel Ore Company deposit is about 40 miles west of the city of Santiago.

The total amount of iron ore mined and shipped from Cuba amounts to 4,472,587 long tons, all of which, with the exception of some 57,469 tons, mined in 1897, came to the United States.

Imports of Iron Ore.

The total imports of iron ore into the United States from all countries during the calendar year 1900 amounted to 897,831 long tons, valued at \$1,303,196, or \$1.45 per ton, being an increase of 33.2 per cent. over the importations in 1899. The importations accredited to 1900 exceeded those of any year since 1891, the valuations given representing the quotations at the port of shipment, but do not include freight or import duty. The higher valuation placed upon ores from Germany and the United Kingdom is because some of the chemical

constituents other than iron increased the valuation. The following table shows the imports of iron ore in 1900 and the valuations by countries:

Imported from—	1900.	
	Quantity. Long tons.	Value.
Cuba	431,265	\$537,496
Spain	253,694	494,668
French Africa	20,000	23,536
Italy	18,951	50,945
Greece	23,350	31,685
Newfoundland and Labrador.....	140,535	142,685
United Kingdom.....	397	3,274
Colombia	3,000	4,854
Quebec, Ontario, &c.....	5,588	10,139
Venezuela	700	1,621
Other countries.....	351	2,293
Totals.....	897,831	\$1,303,196

The largest foreign contributor to the iron ore supply of the United States was the island of Cuba, where the deposits are controlled by United States capitalists. Slightly over 250,000 tons of iron ore came from Spain, and 140,535 from Newfoundland and Labrador.

These countries together furnished 825,494 long tons, or 92 per cent. of the total. Greece, Algeria and Italy were the only other countries sending over 10,000 tons each.

An examination of the imports by customs districts demonstrates that, as in previous years, the greater portion of the iron ore came to Baltimore and Philadelphia, 862,724 tons, or 96 per cent. of the total, being entered at these ports.

Exports of Iron Ore.

Until late years practically all of the iron ore mined in the United States, as well as that imported, entered into domestic consumption, but since the erection of modern blast furnaces in Canada some of the iron ore from the Lake Superior region has been exported, amounting in the year 1900 to 51,460 long tons, valued at \$154,756. Some ore was also sent to Mexico for use as flux in 1899.

W. L. C.

Gas and Oil Fields of the West and Southwest.

A bulletin issued by the United States Geological Survey contains information of interest regarding the oil and gas fields of the West and of Texas. The report says the productive territory is being constantly extended, as there is a demand for gas as fuel and as oil is proving a profitable resource. The principal productive field of the Western interior area is in southwestern Kansas and the northern part of Indian Territory, although both gas and oil in limited quantities have been found as far north as Kansas City and along the western border of Missouri. The report says the coal measure rocks of Iowa thus far have not proved productive. The small flows of gas there are sporadic and the exploitation of that field has been attended with considerable uncertainty and risk.

According to the report the Beaumont oil has a gravity of 22 degrees Baume, has an asphalt base and contains a considerable quantity of sulphur. "Tests show," says the report, "that the percentage of light oils which it contains is very low and it is therefore regarded as a fuel oil. The cluster of wells at Beaumont which have reached the oil deposits are 4 miles south of the center of the town and within a radius of ½ mile from the first discovery. Up to June 15 those actually recognized as producers numbered 11."

Regarding present prospecting in the Texas field the report continues: "The active drilling has been nearly all confined to the Spindle Top Heights and thus far has developed a field of limited extent. Some of the wells situated very near to the producing territory are now proved to be failures. This has caused a more conservative spirit among the operators and the oil business is beginning to be conducted on a more careful basis. The fact that the reservoir under Spindle Top Heights appears to have only a limited extent does not preclude the possibility of finding oil in the same general horizon in other places. Instead of a continuous field prospectors should expect to find a number of small fields occurring at wide intervals."

The McHenry Involute Track Level.

In these days of sharp competition in railway traffic great attention is being given to improvement in track surfacing, and in this the careful and uniform elevation of curves is one item of the utmost importance. It is coming to be an axiom that uniformity of elevation is of far more importance than the exact amount of elevation, and any failure to secure this causes unpleasant swaying of the cars, and besides results in far more rapid deterioration of rolling stock. The ordinary railroad track level is a very imperfect device. The variations in the elevation are usually in steps of $1\frac{1}{2}$ inches each, making it impracticable to conform to the rules usually issued by every company covering the proper degree of superelevation, and in addition the bubble tubes are frequently so imperfect and sluggish that variations in level as high as $\frac{1}{2}$ inch fail to affect the position of the bubble. Under such conditions it is impossible to obtain a uniform superelevation of the outer rail.

The instrument here illustrated, the invention of E. H. McHenry, chief engineer of the Northern Pacific Railroad, is provided with a blade of hardened tool steel, carefully ground to an involute curve. This is slotted into one end of the level, Fig. 2, in such a way that the lowest portion will always be in contact with the ball of the rail. In other words, the level can be raised to the full limit of 6 inches while keeping the contact point of the elevation plate in the same relative position on the rail. These conditions can only be met by applying the principle of the involute curve, hence the name of the level. Each side of the plate or blade is carefully graduated and means provided for fastening it instantly in any position.

With the use of this tool, which is made by the Sheffield Car Company of Three Rivers, Mich., the degree

with which German trade shows larger exports than imports), the second is held by Austria-Hungary, and the fourth by Holland, though from 1896 to 1899 inclusive this was held by Russia, which is now fifth. Within this period—1891-1900—there have been notable increases in Germany's exports to England (notwithstanding that since 1897 there has been no commercial treaty between these countries), to Belgium, Italy, Sweden and Norway, British India, Australia, China and Denmark. The greatest relative increase has been in the exports to Japan, which have risen from \$3,332,000 in 1891 to \$16,660,000 in 1900.

The Largest Ocean Liner.

The "Celtic" of the White Star line, the largest steamship in the world, reached her dock in New York on Sunday, after a successful maiden voyage across the Atlantic. Her time was 8 days and 46 minutes, the average speed being 14.95 knots per hour. The "Celtic"



Fig. 2.—Enlarged View of Adjustable End.



THE MCHENRY INVOLUTE TRACK LEVEL.

of elevation and extra width of gauge required can, in every case, be accurately and uniformly secured. Provision is also made for resetting the level glass at any time, and, if preferred, the instrument can be furnished with a fixed level.

United States Trade with Germany.

Ambassador White of Berlin has furnished the State Department with the following official statistics of the foreign trade of Germany from 1891 to 1901 inclusive:

In 1891 the United States occupied fourth place in the import trade of Germany with a total of \$108,528,000, being preceded by Great Britain with \$160,888,000, Austria-Hungary with \$142,324,000, and Russia with \$138,040,000. In 1895 the imports into Germany from the United States rose to \$121,618,000, and after that year increased rapidly until 1900, when they reached the sum of \$266,750,400. The United States thus stands far above any other country in this trade, being followed by Great Britain with \$199,920,000, Russia with \$173,740,000, Austria with \$172,312,000, and France with \$72,590,000. During this period American imports into Germany have increased more than those of the last named four countries together. As regards the export trade of Germany the United States has occupied third place during this whole period. In 1900 the United States imports from Germany were to the value of \$104,482,000, in 1899, \$89,726,000, and in 1898, \$79,492,000. Up to 1898 they showed a tendency to decline, amounting in 1891 to \$84,906,000 and sinking in 1894, under the tariff of 1890, to \$64,498,000, the lowest point reached. The first place in the export trade has been continually held by Great Britain (which is the only large country

was not built for speed, but is estimated to be able to make $16\frac{1}{2}$ knots if pushed. She is 700 feet in length, 75 feet beam, 49 feet in depth, of a net register of 13,650 tons, and a displacement at load draft of 37,700 tons, thus being 3600 tons heavier than the "Oceanic." She is the largest vessel ever launched, her displacement tonnage being nearly double that of the "Kaiser Wilhelm der Grosse," and 10,300 tons more than the "Great Eastern." Her twin screws are driven by two sets of Harland & Wolff's quadruple expansion balanced engines, with cylinders of 32, $47\frac{1}{2}$, $68\frac{1}{2}$ and 98 inches diameter, respectively, with 3 feet 3 inches stroke. Steam is supplied at a pressure of 210 pounds by eight double ended boilers, each 14 x 20 feet. Her cargo capacity is immense, and she is fitted with six huge cold storage chambers for the dead meat trade, in addition to similar accommodations for her own stores. She has accommodations for 350 first-class and 160 second-class passengers, and for 2350 persons in the steerage. The "Celtic" was launched at Belfast, Ireland, on April 4 of this year.

The Industrial Department of the Lackawanna Railroad, in charge of William B. Hunt, and having its headquarters at 26 Exchange Place, New York City, has just issued a 300-page booklet under the title "Industrial Opportunities." This work treats of every town on the line, showing its population, its distance from New York and from Buffalo, its railroad facilities, its leading industries, its leading shipments, its rate of taxation, cost of labor, rent of houses, how lighted, whether it has water works, principal power, approximate cost of steam coal, approximate value of lands, and describing vacant lands or factories available for manufacturing purposes.

Some Notes of Travel.

BY ARCHER BROWN, NEW YORK.

The decision of the House of Lords—the court of last resort—in the Taff Vale case, recently announced, will excite interest on both sides of the ocean. Can a trades union, or any other organization, own property, employ officials, carry on extensive operations, and direct movements calculated, under certain circumstances, to do great injury to person and property, and yet have no center of responsibility? The case grew out of the Taff Vale Railway strike of a year ago. It was a bitter struggle, with the usual features of violence. The railway company brought an action to prevent the Amalgamated Society of Railway Servants from tampering with nonunion men at their work. The union replied that they were not a body responsible for the acts of their members or servants, and pointed to the trades union acts of 1871 and 1876, which are the charter of existence of all trades unions. They held that they could not figure in law courts either as plaintiffs or defendants. The justice before whom the case first came ruled that trades unions were amenable to the laws of the country just as though they had been specifically incorporated by law. The matter went to the Court of Appeal, which reversed this decision. Thereupon appeal was taken to the House of Lords, which by its decision brushes aside legal technicalities and goes to the merits of the proposition. The words of the Lord Chancellor are plain enough: "If the Legislature has created a thing which can own property, which can employ servants, which can inflict injury, it must be taken, I think, to have impliedly given power to make it suable in the courts of law for injuries purposely done by its authority."

I notice that the press, even that portion which sympathizes most directly with labor organizations, commends the fairness of the decision, although it is a reversal of the practice of 30 years. Mr. Bell, the secretary of the Amalgamated Society of Railway Servants, accepts it apparently in good spirit, and raises the question whether, under it, trades unions may not bring suit against employers to settle questions at issue.

As I write this, the English papers, in their American telegrams, give lugubrious reports of the rupture between the United States Steel Corporation and its union employees, indicating that violence and bloodshed are likely to mark the further history of the strike. If the Amalgamated Association of Iron and Steel Workers of America were answerable as an organization to the laws of the land, the same as is the large corporation it is fighting, would not its officers and advisers be more guarded in advising violent interference with men who want to work?

By the way, speaking of English newspaper reports of American happenings, it is not at all surprising that our English friends—to say nothing of people on the Continent—have so poor an opinion of the United States and the American people. In four weeks of tolerably close reading of the leading London and provincial journals I only recall one item of American news that was calculated to give a good impression. That was a remark by Ambassador Pauncefoot that the Americans were really generous and high minded people when properly treated. Nearly every other telegraphic dispatch has told either of some crime or calamity. Even shopkeepers have said to me—desiring to be sympathetic: "Your people in the States are dying like rats in the streets from the heat." The strike news is deplorable; the crop news appalling. Italy is calling our Government to account for lynchings in Mississippi. A Chicago professor has declared that without intermarriage with immigrants the Americans would ultimately revert to the aboriginal type. And this is gravely stated for English readers without a thought of humor. The soft coal industry is being organized into a trust by Senator Hanna, "backer of President McKinley." And so on for quantity. On reaching the capital and finding from a file of New York newspapers that the great Republic was going along in its normal and prosperous

course, there was a strong feeling in my party either that the British journals instruct their representatives to distort and contract news or that they have hopeless asses serving as correspondents.

I was in Glasgow at the time the "holiday" broke out, and had no difficulty in confirming previous impressions of at least one cause why the industrial battle is going against the British. The following dispatch tells the story for all England, Scotland, Wales and Ireland:

DAMPING-DOWN FOR HOLIDAYS.

"Motherwell, Thursday.—To-night a number of the public works close for the Fair holidays, and by to-morrow night all the firms will have damped down their places. Operations will not be resumed till Monday, 22nd inst., advantage being taken in the interval to effect necessary repairs on the machinery. . . . With workmen generally money is not quite so plentiful as it was at this time last year, but is still sufficient to provide a week's holiday."

I asked an iron man what was the meaning of the so-called holidays, which practically closed all industrial operations for ten days at the best working time of the year. He said it was the fair season, and they were known as the "fair holidays." A calculation has been made that between Saturdays and the numerous holidays, long and short, which crowd in between January and January, and the time required by many to straighten up after festivities, the average British workman loses one-third of his time. Add to this the stringent rules of labor organizations restricting the product of the day's work, and it is not hard to see why industrial England is stationary, while other nations forge ahead.

I find the temper of the iron trade here still pessimistic, but slightly improving. When I was here three years ago there was great incredulity touching reports from America of large outputs, low costs and radical improvements in methods. Now everything is believed. And the more impossible the story the greater the credulity. Of one thing all are assured. That is that the present prosperous conditions in the United States are but temporary, and that when they are over the floodgates will be opened and cheap iron and steel from America will ruin everything. It is this bugbear which prevents just now a substantial recovery here, for general trade conditions are good. There is marked improvement in shipbuilding. The Continental demand is better. Notwithstanding an increase in Middlesbrough warrant stores of about 50,000 tons since January, stocks of pig iron in the United Kingdom are lower in the aggregate than they have been in a generation. Prices are so much lower than German, American or Belgian that the provincial markets are slowly being regained. Really, there is much at the moment to encourage the Englishman, but he is not in a mood to be encouraged. The specter of the United States Steel Trust is always before him, and now Canada is looming up as a competitor. Nothing would hearten our brother so much as an end of the dreary Boer war; and as, by a late report, it appears that the few remaining Boers are being killed off at an average rate of 56 a day, it may be assumed that the end is not far distant.

Bashlin & Co., Warren, Pa., have been established about two years, manufacturing the Bashlin valve, the special feature of which is that both the disk and seat ring are removable. The latter can be taken out while the valve is under pressure. Should an engineer desire to use this advantage in a valve of this character, there is no regrinding or reseating machine required, only the duplicating of the vital parts. As is well known, the shell of a valve practically never wears out, and the principle of this valve being incorporated, it may be reasonably calculated its life will be increased tenfold.

The Exeter Machine Works, Exeter, N. H., have just built a steam fan from a new design, doing away entirely with the additional foundation for engine. The whole is self contained, and can be immediately bolted down and started up, making a great saving in foundation.

The Schwartz Melting and Refining Furnace.

A new furnace for melting and refining metals is now being brought out by the Hawley Down Draft Furnace Company of Chicago, of which S. T. Bleyer is president and J. C. Hopkins manager. This furnace uses crude oil for fuel and is adapted to the manufacture of gray

made with charges consisting of all pig iron and up to 40 per cent. of scrap. The tests on malleable castings have been made with all pig iron and up to 50 per cent. of scrap, consisting of 35 per cent. of iron and 15 per cent. of steel. All these tests have been very satisfactory. They have shown absolutely no gain in sulphur and surprisingly little oxidation. The gray iron castings

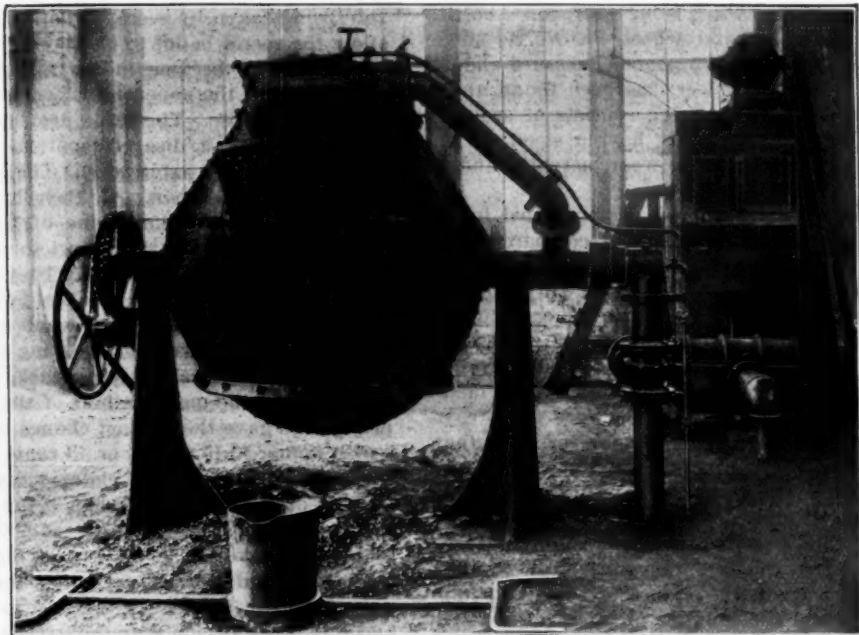


Fig. 1.—In Position for Blowing.

iron, malleable, semisteel and brass castings. An experimental furnace has been tested for the past three months at the works of the company at Superior and Townsend streets, Chicago, and the results have been so satisfactory that the company are now ready to make

have been much stronger and cleaner than those made by the cupola, the average transverse strength of the castings made being 2370 pounds, or the highest grade of machinery castings, while the same mixtures melted in a cupola showed not over 2000 pounds. The malleable

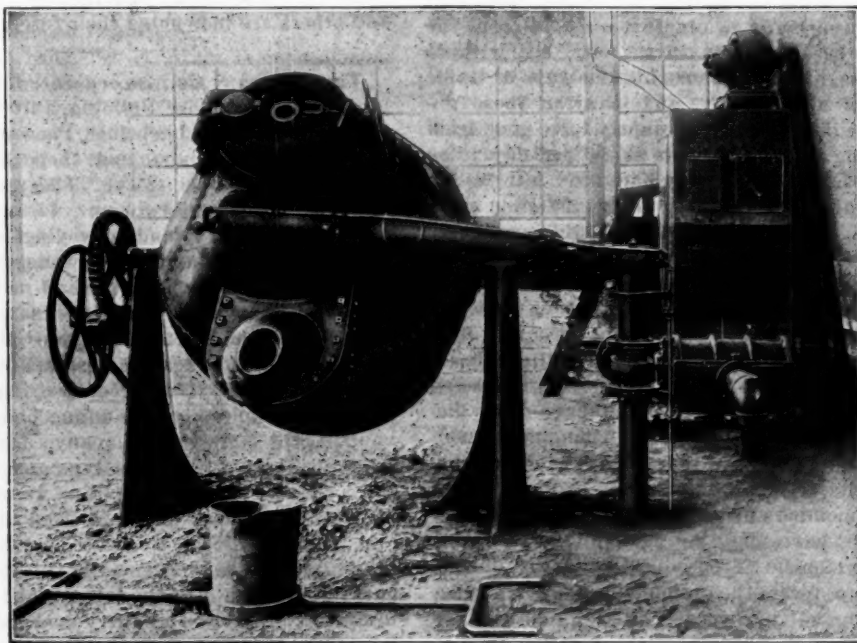


Fig. 2.—In Position for Pouring

THE SCHWARTZ MELTING AND REFINING FURNACE.

them known. A long series of tests has been made under the supervision of H. M. Goodrich, chemist of the Deering Harvester Company of Chicago.

The furnace is illustrated herewith. Fig. 1 shows it in position for operation and Fig. 2 shows it tilted for pouring off a heat. It is of the Bessemer converter type, being mounted on trunnions. The experimental furnace is of a size sufficient to take a charge of 1000 pounds. In this furnace the tests on gray iron castings have been

castings have also been of the best quality. The time required for making gray iron castings from cold metal is one hour and twenty-five minutes and malleable castings two and one-half hours. The shrinkage in making iron castings has been reduced to less than 2 per cent., using all pig iron, and less than 1 per cent. when using 40 per cent. of scrap. The shrinkage on brass castings has been shown to be less than 3 per cent.

The crude oil is fed to the furnace through a small

pipe, the supply being regulated by a valve. The oil enters through two tuyeres on the side of the furnace near the top, and about 18 inches apart, with the openings converging in the interior, the oil being atomized by an air blast. The flame is given a rotary motion over the top of the metal bath, and an intense heat is generated. The charging door is on the top of the furnace, which is tilted on its side when being charged. The tilting is easily done by a hand wheel. A No. 1/2 single gear Root blower, furnishing 2 pounds pressure and requiring but 3 1/2 to 4 horse-power, has been found ample to operate the furnace. The lining consists of ordinary silica fire brick, the original lining having stood the entire three months with very little wear, notwithstanding the intense heat generated.

A considerable saving has been demonstrated in the manufacture of malleable castings as compared with the method of manufacturing such castings with a reverberatory furnace. The cost of melting gray iron has been found to be about the same as in using a cupola. It is expected that these costs will be reduced 30 per cent. when another attachment is made, for which preparations are now under way. The fluidity of the metal has been found to be so great that the very finest castings can be attempted with much greater certainty than accompanies the ordinary practice. Better results are expected with a furnace of larger capacity. One man can easily operate a furnace.

This furnace shows such excellent results that the Hawley Down Draft Furnace Company are confident that it will prove a desirable feature of foundry equipment in any section of the country, but it is particularly well adapted for use in localities having an abundance of oil and dear coal or coke.

Pacific Coast News.

SAN FRANCISCO, CAL., July 29, 1901.—The strike situation is at present the all absorbing topic. The teamsters' strike has in some instances tied up half the trade of the city, and some estimate much more than half. An effort has been made to obtain teamsters from the country and to break in men in the city, but without any great success, as all are unused to the ways of traffic in the streets of a great city, and many of those obtained at some expense from the country have gone back again after being offered as high as \$4 per day. The iron, steel and hardware houses had been left in the same predicament as the rest, but the teamsters in some cases have resigned from the union and come back. But the worst is not yet. We are threatened with a sympathetic strike of 12,000 to 15,000 men along the water front, stevedores, sailors, &c., in which case the commerce of the city would be brought to a full stop. The porters, packers and warehouse men will decide tomorrow between the union and the employers. In some instances members of the latter union have been discharged for refusing to handle goods belonging to non-union firms. It is to be hoped that all this labor trouble may soon find its termination, but the outlook is not that way. The members of the Employers' Association, on the one hand, have made up their minds to deal a death blow to unionism if possible, while the unions, having started to force the unionizing of everything, will fight as long as they can. With all fighting, the contest may be expected to be of less duration than if each separate union fought out its fight, being at the same time aided by the others. There is no great probability that the members of the union will be replaced to any great extent by new men, but they will come back, having resigned from the union or having abated such of their demands as are unreasonable. San Francisco is now the storm center of the social struggle, and it looks as if it had been so designed by those behind the scenes.

The Machinists' Strike.

Meanwhile the machinists' strike has entered on its eleventh week. On Saturday there was a conference held between Henry T. Scott of the Union Iron Works and a committee of the men, but it came to nothing.

Mr. Scott told them that all could come back on the old terms. A great many, if not most of the men, at least those of middle age, want, it is said, to go back, but are deterred by fear of expulsion from the union. In some cases they did go back. Steiger & Kerr, for instance, had an agreement with their men that there should be no strike except on a majority vote of the shop, said vote being taken by secret ballot. The union would not allow the secret ballot to be taken, when the men to the number of 60 became indignant and went back. But on account of the general strike there is little work going on there now. The same firm have an arrangement that in case of a disagreement the matter in dispute shall be settled by arbitration. The National Iron Works employ about 100 men. All their hands except apprentices are out on strike. None of the men earned less than \$3.50 a day, as the proprietors did not want any man who could not earn that. They did not want to go out on strike, and if left to a vote of themselves would not have done so; but they went out with the union. Ever since they have been wanting to go back to work. Twice they had resolved to go back, but each time were prevented by the machinations of the union. At last the proprietors gave them a last chance to go to work to-day—nine hours, \$3.15 a day, or 45 cents more than some of the leaders of the strike claimed was being paid. But instead of a vote of the shop being taken a vote was taken in the union, when out of 600 over one-third refrained from voting at all, but of those who did vote a majority voted against accepting the terms. Here the union stepped in between the men and their employers, and this is one reason why the latter do not wish to have anything to do with strike leaders—they do not care to have strangers come and dictate to them and to their men as to how business shall be carried on. This question of dictation is indeed the rock on which unionism in San Francisco is likely to split.

Little by little the foundries and machine shops are increasing the number of men employed by them. The Union Iron Works have now 1200 hands of all descriptions at work—about one-third of their normal force—and others are increasing their force also. J. O. L.

Tate, Jones & Co., Incorporated.—Tate, Jones & Co., Incorporated, Empire Building, Pittsburgh, have bought a site of land near Leetsdale, Pa., and will erect a large works, to include machine shop, foundry and heavy plate iron and steel works. The present works of the company are on First avenue, Pittsburgh, and the concern make elevating and conveying machinery, pumping power for oil, gas and water wells, gas engines and gas burners, and also do a general contracting business. Plans are being drawn for the new works and active building will be started in a short time. The company have built up an extensive business in elevating and conveying machinery, and recently completed the installation of a complete coal handling plant for the Pennsylvania Light & Power Company, Allegheny. The plant is of the chain and bucket type and of 80-ton capacity. The company also are installing an ash conveyor at the plant of the American Axe & Tool Company, Glassport, and have closed a contract to install a large coal handling plant at the works of the Oliver Iron & Steel Company, South Side. In the latter plant a Robbins conveying belt will be used to carry coal from barges and distribute it to boilers and furnaces throughout the mills. The company have also contracted to supply the Pennsylvania department of the National Tube Company with a complete coal handling plant in which will be used the Robbins conveying belt. The plant will have a capacity of 50 tons hourly.

The machinists' strike at the Sharon works of the National Steel Company, and also at the works of the Sharon Steel Company, has been settled, the men receiving an advance in wages of 50 cents a day, pay and one-half for overtime and 58 1/2 hours to constitute a week's work. The American Steel Casting Company, also at Sharon, refused to grant the terms agreed upon as above.

Lake Iron Ore Matters.

DULUTH, MINN., August 4, 1901.—July astonished the ore trade by the size of shipments. The Duluth and Iron Range docks at Two Harbors, Lake Superior, exceeded all others and sent out 1,005,614 gross tons. This was the first time any dock system on the lakes ever exceeded the million ton mark for a single month, and the record is a very remarkable one. The road handled to these docks in the same time 964,455 gross tons, showing that about 40,000 tons less remained in the docks at the close of the month than at its commencement. This was an average of 30 trains per day for the entire month. The Minnesota shipments for July were, in all, 2,120,000 gross tons, against 1,610,000 tons for the corresponding month last year. For the season to date Minnesota roads have shipped 4,687,000 tons, which is to be compared with 4,831,000 tons in 1900, 3,406,000 in 1899, and 2,768,000 in 1898. Other upper lake ports are shipping very heavily, except Marquette, which appears to be for some reason somewhat behind so far. The Gogebic is making big shipments, as is the Menominee.

The strike in some co-ordinate plants of the United States Steel Corporation is having no effect, of course, on the mining branch.

Of the various underground old range mines, the Pioneer, of the Vermillion range, is perhaps showing the greatest proportionate gain, and for July shipped 106,000 tons. It is likely to make a far better record than in any past year. The Fayal remains far in the lead of any mine on any range. The ore taken from Two Harbors last month was on 213 ships, an average cargo of 4722 gross tons, an average that has never been equaled on the lakes, and, if I am not very much in error, never on any ocean for any considerable time or volume of business.

Owing to the desire of the intervenors, the Penobscot Mining Company, to introduce additional testimony, the decision of the Minnesota State Railroad Commissioners as to the character of ore traffic will be delayed, and will not be handed down till after September 10.

Marquette Range.

On the Marquette range, E. F. Bradt is commencing explorations on a large scale about seven miles west of Republic, where he has several sections under option. The lands are owned in the East and were selections made years ago by some of the best known mineralogists of the country. It is hoped that good finds may reward Mr. Bradt's efforts and expenditures. The Chester Mining Company have closed down indefinitely their Rolling Mill mine, a lean Bessemer, near Negaunee, there being small demand for its grade of ore. Stock piles at the mines of this range are not moving out as had been hoped, and the shipments to Marquette docks are rather small. The original Swanzey, near the Princeton, is to be explored. It was operated a short time as an open pit property, and the bottom of the pit is said now to be in ore that will assay very high in iron, though non-Bessemer. The Negaunee mine is hoisting about 600 tons daily with a temporary plant, and the usual force is working underground. Hoisting by the permanent plant, newly located, will commence soon, and 1200 tons daily will be the product once more. Record speed that is for rebuilding a large engine plant in 30 days. It was July 12 that the Negaunee "came down." The American Mining Company (United States Steel) have bought a 7-108th interest in the fee of the Negaunee mine at a price that makes the entire property figure at about \$1,500,000. The mine pays a royalty of 25 cents a ton, and the output will not exceed 250,000 tons a year for some time. The American Mining Company's lease has about two years to run. The Cleveland Cliffs Iron Company are letting contracts for 20 dwellings, to average \$1000 each, to be occupied by men employed in their Lake mine. The same company have given the Ishpeming School Board several acres in the heart of the town for a school recreation ground. This company's Marquette & Southeastern road is being ironed and graded rapidly. Its large charcoal furnace at Marquette is also pushed along. The Michigamme mine will be thorough-

ly explored underground by diamond drill. The Bristol mine is adding men at its Beaufort and is exploring quite thoroughly. Oglebay, Norton & Co. think they have a fine prospect for a large ore body there.

On the Menominee range E. W. Hopkins has been made superintendent of all Oglebay, Norton & Co.'s mines, including the Commonwealth mines and Bristol of this range, and the Beaufort. Considerable work is being done about Amasa.

Mesaba Range.

On the Mesaba range it is stated that the find recently made in sections 31 and 32, T. 57, R. 22, contains as now shown up about 10,000,000 tons of ore, mostly low grade, though one hole cut some distance in an ore running 62 per cent. The finds made east of the Arcturus mine, T. 56, R. 23, are also low grade, too low for present value. It is supposed that the Arcturus exploration is showing about the same quality. Ore is said to have been found in the northwest part of section 22, T. 58, R. 20, where the Phoenix Mountain Iron Company have been working some months with two drills. The Roberts explorations at the extreme west end of the range are scarcely started yet. Some new work is being done in T. 59, R. 15, and a number of tracts lying close to Biwabik, east and south for the most part, will be explored at once. Burrows, Rust and Goff, large land owners, of the western part of the range, will explore their lands in person hereafter. They have in the past leased to operating companies. Land surrounding the Penobscot mine, in T. 57, R. 21, has been taken for exploration. A. P. Silliman, mining engineer at Hibbing, has issued a map of the western part of the range and a corrected map, with developments down to date, of the range easterly from R. 22.

The Ashland Iron & Steel Company, operating the Hinkle furnace at Ashland, Wis., has increased its capital to \$1,000,000, in order to expend \$500,000 in improvements and extensions. A battery of 60 patent ovens, for the saving of by-products, will be put in at the furnace, connected with a chemical works and a refining plant. Each kiln will hold 80 cords of wood. Several buildings, averaging about 50 x 150 feet, are under way. The company will also make other improvements of an important nature later.

The Ontario Government's concession covering a large part of Hunter Island, north of Minnesota and carrying the eastern extension of the Vermillion range, is likely to be transferred to a large exploring and operating concern, and thoroughly explored as fast as may be. The concession is so large, however, embracing 147 square miles, that it will be a difficult undertaking to explore it all for many years.

Nearly 1000 tons of graphite, mined at the new property at L'Anse, Lake Superior, is being treated at the company's plant. The trade is taking very kindly to this mineral, it is understood.

Duluth mining men who have recently been on the North Pacific Coast looking up iron ores, bring back magnificent samples and glowing reports of the ores to be found near Seattle.

D. E. W.

In the issue of *The Iron Age* of June 27 an illustrated description was printed of a crushing plant for ballast for the Lehigh Railroad Company at North Leroy, N. Y. The impression was created by the heading of the article that the firm of C. A. Bartlett & Co. had built both the crushing and the elevating machinery. As a matter of fact the Duerr Contracting Company of North Leroy placed the contract for the crushing machinery, consisting of four five-jaw Morris crushers, with the Tyrone Foundry & Machine Company of Tyrone, Pa. The elevating machinery was built by Bartlett & Co.

The corrugated iron sides and roof of the rolling mill of the Crum Lynne Iron Works have arrived and the company have been notified that the structural steel has been shipped. The new structure will be twice as large as the old one, which was recently destroyed by fire. The capacity of the plant will be greatly increased and considerable new machinery will be put in.

Canadian News.

Iron Bounty Regulations.

TORONTO, August 3, 1901.—Amended regulations governing the payment of bounties on iron and steel have been approved by the Governor-General and just issued by the Department of Trade and Commerce for the information of all concerned. The bounties are hereafter to be paid by that Department, instead of by the Customs Department. This change is in accordance with legislation passed last session, and the administration of the bounties was as a matter of fact some time ago taken over by the Minister of Trade and Commerce. Until April 23 next the bounty on steel ingots manufactured in Canada out of ingredients of which not less than 50 per cent. consists of pig iron made in Canada remains \$3 per ton; on puddled bars made from Canadian pig iron, \$3 per ton; on pig iron produced from Canadian ore, \$3 per ton; on pig iron produced from foreign ore, \$2 per ton. From these rates the bounties decline by a descending scale until they vanish in 1907. In claiming bounty for steel ingots and puddled bar the manufacturer is required by the new regulations to make affidavit before a collector of customs or justice of the peace setting forth that the requisite proportion of Canadian iron has been used in their manufacture; that no part of the ingots for which bounty is claimed has been made of puddled iron bars manufactured outside Canada, "and no part hereof has been included in any claim for bounty heretofore made." Similar affidavit as to the proportion of Canadian iron and as to previous bounty is required in the case of claims for the puddled bar bounty; and affidavit as to the origin of ore is required in the case of claims for the pig iron bounty.

But under the regulations the manufacture of pig iron, &c., will be carried on much like that of articles subject to an internal revenue tax. It will be under the surveillance, so to speak, of the Government. A general regulation provides as follows:

"From and after the first day of July, 1901, the manufacture of such steel ingots, puddled iron bars and pig iron shall be under the supervision of such officers as may be appointed or detailed for the purpose by the Minister of Trade and Commerce, and the cost of such supervision shall be paid by the proprietor or the proprietors operating the furnaces (or smelting works, as the case may be) under their supervision."

A Great Charcoal Contract.

H. R. McLellan of St. John, N. B., has entered into a contract to cut and skid for the Clergue Works 300 cords of hard wood every day for a year. The wood is to be used in making charcoal for the steel works at Sault Ste. Marie. Other works will be in operation to save and utilize the by-products of the wood thus reduced to carbon. The wood, according to a statement made by Mr. McLellan himself to the *Montreal Herald*, is to be delivered on skidways alongside the Algoma Central Railway that the Clergue Syndicate are building. Mr. McLellan considers the contract the biggest of its kind ever entered into on this continent. It is said, however, that it will only supply half the wood required by the carbonization plant, which is to have a capacity of 600 cords per day. Mr. McLellan expressed his intention to be on the ground with his men on August 15. His gang are to be brought from Northern Maine and New Brunswick to cut and handle the timber.

The timber will come from land comprehended in the subsidies granted for the construction of the Algoma Central and the Ontario Western and James Bay railways. These include several million acres, and the only timber reserved is pine. The hard wood, which can be utilized for charcoal and for the manufacture of cabinet lumber, as well as the spruce and poplar, &c., which can be made into pulp wood, go with the land. There is scarcely a doubt that there will be an adequate supply of charcoal wood to keep the great carbonization works going for years.

The announcement is made that the entire amount of the bonds of the Nova Scotia Steel & Coal Company has been taken up. The issue is \$2,500,000.

A letter has been received at the Bureau of Mines from Professor Coleman, in which he says that he has completed work in the Michipicoton district. A thousand tons of ore per day is being taken out of the Helen mine, he says. Boyer Lake was being pumped out to expose lower levels of ore. He finds great interest being taken by Americans in the iron deposits of Northwestern Ontario.

One hundred coke ovens are being heated and will be in operation in two weeks at Sydney. The 200 ovens now working supply coke to furnaces Nos. 1 and 2, and those now being heated will supply No. 3, which is nearly ready to blow in.

The National Iron Works were formally opened at Wingham, Ont., on July 31.

C. A. C. J.

The World's Coal Production.—The Board of Trade of Great Britain has issued a report on the production of coal in the various countries of the world. It is explained that the totals for the year 1900 are necessarily in many cases estimates only, as the definitive returns are not yet available for all countries. The following is a statement of the output of the principal coal producing countries for the past five years:

Country.	(000's omitted.)				
	1900.	1899.	1898.	1897.	1896.
Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
United Kingdom.....	225,181	220,095	202,055	202,130	195,361
United States.....	245,422	226,554	196,406	178,930	171,416
Germany.....	109,225	101,460	96,310	91,055	85,690
France.....	32,587	32,256	31,826	30,337	28,750
Belgium.....	23,352	22,072	22,088	21,492	21,252
Russia.....	.....	14,565	12,185	11,171	9,351
Austria-Hungary....	.....	12,694	12,186	11,611	11,033
Spain.....	2,773	2,565	2,434	2,011	1,853
Japan.....	.....	6,722	6,696	5,188	5,020
India.....	.....	4,937	4,606	4,063	3,848
New South Wales..	5,507	4,597	4,706	4,384	3,910
Canada.....	4,761	4,506	3,726	3,380	3,344

It will be seen that the United Kingdom has in the past two years given way to the United States as the largest coal producer. The report states that the total production of the world is about 650,000,000 tons per annum, of which the United Kingdom produces rather more than a third, and the United Kingdom and the United States together account for nearly three-quarters.

The British House of Lords this week rendered an important judgment affecting trades unions. The case was brought up on appeal from the judgment of the Irish courts awarding a wholesale butcher damage against the Butchers' Assistants' Association, which brought pressure to bear on retailers to boycott the plaintiff until he dismissed a certain nonunion employee, threatening, otherwise, to call out the union employees of the firms concerned, and, finally, it induced the non-unionist to leave the plaintiff. The Lords dismissed the appeal, on the ground that the acts of wrongful and malicious conspiracy were not undertaken to advance the interests of the workmen themselves, but solely to injure the plaintiff.

The Sheffield Car Company, Three Rivers, Mich., have issued a very interesting statement relative to the achievement of a gasoline car of their manufacture. This car takes the place of the usual workmen's car, propelled by hand, being operated by a gasoline motor. The statement shows that the car is not only successful in affording a convenient means of transporting railroad men moderate distances, but that it can be depended upon for much better service than is usually considered available by this character of equipment.

The wire mill controlled by Lazare Weiller at Havre, France, has undergone a reorganization. The stock of the old company has been reduced from 15,000,000 francs to 2,700,000 francs. Then the latter capital was increased to 5,000,000 francs by the issue of 2,300,000 francs of new stock issued at 102 francs per share. The old board resigned and a new one was elected, headed by E. Lantrac, formerly of the Fives-Lille Company. The new company are named Compagnie des Trefileries du Havre. It appears that heavy losses were incurred through the depreciation of steel purchased.

The Iron Age

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Our Exports of Iron and Machinery.

The Bureau of Statistics has lately issued the official statistics of the exports of iron and steel for the fiscal year ending June 30, 1901. These figures, however, since they include the exports for the second half of 1900, do not reveal as they ought what has been the recent history of the export movement. In fact, even the figures for the first six months of the current year fail to reveal to its full extent the sharp falling off in business in this direction, because in the earlier months of the year large shipments on old orders were still going forward. It is a fact well known to those engaged in the iron and steel trades that for months no new export business has been done and that therefore the figures for the second half will be very small, unless some changes, now apparently beyond the reach of possibility, take place. The trade at large should bear this in mind when studying current statistics.

For the sake of more closely reflecting comparatively recent happenings we have compiled the following table showing the exports during the first half of 1901 and during the corresponding period of 1900:

Exports of Domestic Iron and Steel.—Gross Tons.

Articles and countries.	Six months ending June, 1900.	1901.
Iron and steel, and manufactures of:		
Iron ore.....	3,632	12,889
Pig iron:		
Ferromanganese.....	16	.....
All other.....	74,671	43,125
Scrap and old, fit only for manufacture.....	22,935	6,387
Bar iron.....	3,408	13,823
Bars or rods of steel:		
Wire rods.....	5,279	3,050
All other.....	22,034	17,093
Billets, ingots and blooms.....	12,890	26,550
Hoops, bands and scroll.....	258	929
Rails for railways:		
Iron.....	4,521	437
Steel rails exported to:		
Europe.....	15,371	31,936
British North America.....	58,602	33,215
Central American States and British Honduras.....	20	4,459
Mexico.....	19,227	25,683
West Indies and Bermuda.....	5,718	4,970
South America.....	2,735	39,502
Japan.....	35,876	17,364
Hawaii.....	5,971	.....
Other Asia and Oceania.....	43,003	31,985
Africa.....	9,436	10,779
Totals.....	341,971	311,297
Sheets and plates:		
Iron.....	5,662	4,435
Steel.....	16,252	19,082
Tin plates, terne plates and taggers' tin.....	62	399
Structural iron and steel.....	32,576	29,682
Wire.....	44,896	40,491
Nails and spikes:		
Cut.....	6,066	6,489
Wire.....	17,834	10,346
All other, including tacks.....	949	963

So far as the tonnage figures are available this shows a falling off from 466,268 tons to 423,184 tons against the first six months of this year. We know, however, that the sales for export of pig iron, of scrap, of tin plate and sheet bars, of steel billets and of ship plates have almost entirely ceased, and that competition with the low prices made by European mills for steel rails

will cut down exports very sharply in the future. We may note that we look with suspicion upon the reported exports of iron rails, noted in 1900. We feel convinced that this item ought to be included in old material and scrap. To what extent the same applies to some of the exports of steel rails we are unable to judge.

We print below a comparison of the exports of those articles of iron manufacture, outside of the hardware industry, for which values are given in the official statistics:

Exports of Machinery and Iron Manufactures.

Articles and countries.	Values. 1900.	Values. 1901.
Car wheels.....	\$74,685	\$105,928
Castings, n. e. s.....	884,599	521,067
Machinery, machines and parts of:		
Cash registers.....	395,070	407,569
Electrical.....	2,542,731	3,069,222
Laundry machinery.....	258,730	262,052
Metal working.....	3,680,097	1,523,816
Printing presses, and parts of...	640,942	351,492
Pumps and pumping machinery....	1,573,423	1,010,357
Shoe machinery.....	606,330	531,971
Total machinery.....	\$10,656,607	\$7,783,474
Steam engines, and parts of:		
Fire.....	6,780	5,525
Locomotives.....	2,928,845	2,497,324
Stationary.....	372,916	401,295
Boilers and parts of.....	834,756	675,743
Pipes and fittings.....	3,381,553	2,526,927
Saws.....	65,336	55,747
Scales and balances.....	258,386	247,473
Stoves, ranges, and parts of.....	254,337	236,075
All other manufactures of iron and steel.....	8,698,336	7,648,402

In spite of the increase in the exports in some lines of machinery, notably in electrical machinery, there has been a sharp decline. It is, unfortunately, most striking in machine tools and in pumping machinery.

The item of pipes and fittings continues to remain ambiguous in the export statistics. We believe that it jumbles together cast pipe and steel merchant pipe. Just which branch is chiefly responsible for the dropping off it is, of course, impossible to determine. We understand that practically no new export business has been done for some time past in cast iron pipe, which is only natural in view of the decline in the cost of pig iron abroad.

On the whole, the record of export statistics during the first half of the current year, favorable as it is, must not be misinterpreted. That is past and gone. The future, so far as the balance of this year is concerned, will certainly show a heavy shrinkage due to changed conditions. This does not, of course, mean that we have lost our hold. It is only that we are too busy at home and employed too profitably to take much export business. We have shown that we can get it when we want it.

A Lake Shipbuilding Proposition.

Congressman Boutell of Chicago has begun the agitation of the question of abrogating the old treaty with Great Britain, which prevents the building of war vessels on the Great Lakes. He believes that the time has come when this treaty should be annulled in the interest of the great shipbuilding industry which has sprung up on these inland waters. This is an interesting question, which may at some time become exceedingly important to large manufacturing interests, as well as to the lake shipbuilders. At present, however, it is one of speculative or sentimental importance only, because the abrogation of the treaty would in itself not enable the lake shipbuilders to do much in the way of bidding on the construction of war vessels of any size. In the first place, it is necessary for all vessels larger than canal boats to use the Canadian canals on their passage to the ocean. In the second place, it would be

necessary to have even these canals deepened considerably to furnish passage for vessels drawing such a depth of water as war ships. It is certainly absurd for the people of this country to continue to depend on the Canadian canals to furnish them a permanent outlet from the Great Lakes to the ocean. While it is desirable that the privilege of building war vessels should be enjoyed by the lake shipbuilders, it is of much more importance that an outlet for large vessels should be built on American soil. The undertaking would not be so seriously expensive as to be prohibitory and would be of such enormous benefit to a vast section of this country, and to great manufacturing and commercial interests, both East and West, that it should be assumed by the national Government. For this purpose a canal is needed between Lake Erie and Lake Ontario on American soil. This would leave the Lachine Rapids of the St. Lawrence River as the only obstacle to be overcome. It is likely that the Canadian Government would co-operate with our national Government in deepening the channel of the St. Lawrence River through these rapids, so that a thoroughly safe waterway would be permanently provided for the vessels of all nationalities using that river. Possibly the sentiment of the country might be more strongly in favor of a deep waterway exclusively on American soil, which could be obtained by the improvement of the Erie Canal, thus making the Hudson River a part of the outlet from the Great Lakes. Whichever route might be adopted, the time seems fitting for the agitation of such an improvement of our internal water communication. The lake shipbuilders would then be able to build all kinds of seagoing vessels and thus add greatly and rapidly to the advancement of the country in ocean shipbuilding. The manufacturing interests of the West, with which steel shipbuilding is closely related, are deeply concerned in the enlargement of the field of the lake shipbuilders. It is necessary for them, however, to work for the improvement of the means for reaching the ocean, as well as for the abrogation of the treaty.

A Machine Shop Experience.

The strike of the machinists, which has practically terminated, was based on quite a number of erroneous ideas, almost any one of which, it seems, should have been sufficient to stamp their action with failure from the beginning. Among these one of the most important was the assumption that all men working at tools in machine shops should be classed as skilled mechanics and be paid wages which would compensate them for the time taken in learning the trade, if not for the experience acquired during subsequent years of service. This was undoubtedly the case in former times. Machinists were then in every case skilled mechanics, capable of handling any class of work coming up in a shop. The development of improved tools has, however, gradually made specialists of most workmen in machine shops. This has, of course, been particularly noticeable in shops running on specialties, in which work is constantly being duplicated at almost every machine. It is not so well known that even in general shops the tools now in use are capable of being easily mastered by men of fair intelligence with some little education.

An instance which illustrates this recently occurred in a shop which does a variety of work and has a high reputation for the accuracy and excellent finish of its products. In this shop a large planer was installed. It was a much bigger tool than any others in the shop and represented quite a change in the equipment. A compe-

tent machinist was given charge of the planer, and after running it for a month he asked for an advance in wages, claiming that he should receive higher pay on account of its greater size and the heavier work turned out by it. He was given another job and a second man was assigned to the machine. In a short time he made the same demand, and a third man was put in charge of the planer, with whom the manager had a like experience. Growing tired of this result of putting good mechanics in charge of what he considered a very simple tool, the manager went out to a laboring gang and asked the foreman to point out some man from among them of fair intelligence and a little education. Such a man was at once designated and the manager conducted a civil service examination as follows: "Can you read and write?" "Yes." "Have you ever worked in a machine shop or at any kind of a machine?" "No." This being deemed satisfactory the man was taken into the machine shop and put in charge of the planer, and after a course of instruction extending over two or three weeks he was able to manage the tool without supervision, and was regularly employed to operate it from that time. The selection of this man was designed as a lesson to the men in the shop, who were persistently demanding higher wages whenever they could frame a pretext, usually a claim for superior knowledge or expert skill.

CORRESPONDENCE.

Steel in Car Construction.

To the Editor: The recent order of a leading railroad for 2000 cars in which wood as a constructive material maintains its old time supremacy is eloquent testimony to the existing methods of steel car construction. Evidently the battle has not yet been won for steel, greatly as it is desired to effect the substitution of steel for wood in this important channel of consumption.

If iron and steel were exclusively employed in the construction of the 100,000 freight cars annually required by the business of the country it would mean a consumption, approximately, of 1,250,000 tons, or say about one-tenth of the entire production of iron and steel within the United States.

This demonstration of the inadequacy of present methods of construction in steel freight cars should lead to earnest inquiry to determine in what respects the work of the car designer falls to meet the requirements of the times.

Having been connected with the development of iron and steel car construction for nearly 20 years past, and given it serious study for a much longer period, I would like to call the attention of your readers to some of the weaknesses of present constructive practice which must be eliminated before it can be said that wood is no longer "in it" as a material for car construction.

The first criticism which may be justly advanced is that the steel now employed does not have sufficient tensile strength. The combined skill of the chemist and metallurgist ought to be enlisted in the production at reasonable cost of a metal of higher initial tensile strength. Attention to this question of tensile strength in other branches of production has produced striking illustrations of high ratios between weight of vehicle and weight of load. Ratios of 8 to 1 are not uncommon.

It is within the recollection of thousands of survivors of the Civil War that the ratio of weight of railway car to its load was 1 to 1, a 10-ton car having a normal capacity of 10 tons. After 40 years of effort in railway car construction we have not passed the ratio of 3 to 1, while the great bulk of the tonnage of the country is handled, as statistics show, on a ratio of 2 to 1. That is to say, a car weighing 10 tons will carry a load of 20 tons; but as for every car moved one mile loaded there is an average movement of another mile empty, it follows that the movement of car weight is responsible for one-half the cost of transportation by rail.

By this it will be seen how important a bearing on the reduction of dead weight is the question of tensile strength. Were material of 90,000 pounds tensile strength employed instead of 60,000 pounds per square inch it is evident that 2 tons would do the work of 3, and hence that a 20-ton car would be as serviceable as one of 30 tons constructed of the weaker material.

The second criticism to which existing methods of construction are open is that the metal used is greater in amount and weight than is necessary were greater study given to the subject of distribution and the elimination of every ounce of surplus in places where it is not rendering a maximum of service.

A third criticism is as to the method of construction. Of late years there has been a tendency to experiment with rigid, riveted structures, making of the body of the car a single piece like a boiler or a kettle. To this is largely due the failure of steel car construction to more rapidly displace wood, as witnessed by the fact that the American Car & Foundry Company supplied 63,000 wooden freight cars during the year 1900.

It would seem that every one knew or should know that in case of train derailment the one first and all important consideration is to clear the tracks for traffic with the least possible loss of time. The officials of the Pennsylvania Railroad long since learned the lesson that derangement of traffic might constitute a loss many fold greater than the damage to a freight train by derailment or collision; hence, at any sacrifice, the tracks must be cleared of wreckage without the unnecessary loss of a minute's time. The advent of the new one-piece cars has created some entirely fresh experiences to wrecking officers. Cases have occurred where the jammed and telescoped cars had made of themselves still larger units, so heavy as to defy the lifting power of the heaviest wrecking derricks in the Pennsylvania's equipment, and relief has only been had, after hours of excessive delay, by calling out a large force of machinists with hammers and chisels to cut apart by force of human muscle the tangled mass of riveted plates that obstructed the world's highway. The corollary of this is seen in the indisposition of the Pennsylvania to abandon the use of wood in the construction of its latest equipment.

In the opinion of the writer progress in steel car construction will be made by the rejection of the riveted method and the substitution of bolts and nuts for the binding of the constituent parts of the car; in the acceptance and elaboration of the idea of simple, interchangeable parts, in order that the car may be disassembled as rapidly as it may be assembled and united, and to the end that there may be the maximum of salvage when a car may be derailed or suffers from collision, and also in the employment of material of the highest attainable tensile strength consistent with reasonable cost.

Certainly there are few to-day who are not ready to accept the proposition that steel is bound to wholly displace wood in car construction. The work is one of vital importance to all producers of pig metal and consumptive steel. Why prolong the use of wood unnecessarily into the twentieth century? It rests with the designers and manufacturers of equipment to solve the problem confronting them.

GEORGE W. DITHRIDGE.

NEW YORK, August 3, 1901.

In a recent bulletin issued by Carroll D. Wright, United States Commissioner of Labor, some interesting statistics are given covering the labor situation in Great Britain in the year 1899. One remarkable fact developed by these statistics is that of the total changes in the line of increase of wages and reduction of hours of labor only 3 per cent. were secured through strikes. Of 1,175,576 individuals affected by such changes in the year 1899 only 34,273 had their wages increased in consequence of strikes, and of the whole number affected by changes in wages only 1132 had their wages reduced. The net results of all the changes last year showed an aggregate increase in the wages of working people in Great Britain of over \$442,000 per week, the average increase per week for each employee being 37½ cents. Another interesting feature connected with this showing is that 53 per cent. of the employees affected by changes

had their wages increased as the result of direct negotiation. In 32 per cent. they were the result of arbitration, mediation or other forms of conciliation, and in 15 per cent. they were the result of the automatic action of sliding scales. The improvement in the condition of the British workmen during the past seven years has been remarkable, wages having steadily increased during that period, while the hours of labor have been cut down in corresponding ratio.

PERSONAL.

Charles I. Rader, manager of the furnaces of the Republic Iron & Steel Company, in Mahoning and Shenango valleys, has resigned and will go to Salt Lake City to take charge of mining interests. He has been succeeded by Charles Hart.

David Baker, who has been superintendent of the blast furnaces of the South Works of the Illinois Steel Company, has resigned to accept the position of general superintendent of the Dominion Iron & Steel Company, Sydney, C. B.

Henry S. Loud, managing director of the British Westinghouse Company, is now in Pittsburgh, having returned from his European trip. While in England he directed the preliminary operations looking toward the erection and equipment of the Manchester plant.

Charles H. Steadman of Addyston, Ala., has been appointed general superintendent of the United States Cast Iron Pipe & Foundry Company's plant, at Bessemer, Ala.

C. A. Vogt, assistant auditor of the American Steel & Wire Company, has been appointed auditor in the place of C. A. Honecker, resigned. Mr. Vogt's headquarters will be in the Western Reserve Building, Cleveland, Ohio.

J. W. Waterman, chief engineer of the Dominion Iron & Steel Company, has resigned that position and accepted a similar one with the Clergue Company, at Sault Ste. Marie. He leaves Sydney about September 1.

William Strang of Braddock, Pa., has been appointed assistant superintendent of the blast furnaces of the National Steel Company, at Youngstown, Ohio.

S. F. Pryor, formerly with Handlan-Buck Mfg. Company, has assumed charge of the railway supply business of the Simmons Hardware Company, St. Louis, Mo.

F. E. Bausch has succeeded J. A. Vail as manager of the St. Louis office of the Hooven, Owens & Rentschler Company, manufacturers of the Hamilton-Corliss engines, in the Laclede Building.

Walter M. Wood, formerly associated with the Niles Tool Works, has now accepted a position with Manning, Maxwell & Moore, representing them at their new store, 128 Oliver street, Boston. G. E. Randles, formerly with the Pratt & Whitney Company, Hartford, is now representing Manning, Maxwell & Moore at the Philadelphia office, and David Hunt, Jr., formerly connected with the New York office, is now at the Cleveland office, which is located in the Williamson Building.

J. J. Wagoner, resident partner of Fleser, Wagoner & Bentley, pig iron commission merchants, Monadnock Building, Chicago, is seriously ill.

H. C. Frick has been elected a director of the Equitable Life Assurance Society.

The rod mills of the Sharon Steel Company, Sharon, Pa., were started up on Tuesday, August 6. The mills are duplicates of each other and are said to have worked very satisfactorily.

The sum of \$100,000 is to be spent on improvements to the plant of the American Locomotive Company at Richmond, Va. The money will be spent chiefly upon electrical appliances and new machinery, and will enable the plant to increase its output from six to ten heavy locomotives weekly.

The Strike in the Sheet, Bar and Hoop Mills.

Since our last issue there have been some very important developments in the strike in the sheet mills of the American Sheet Steel Company and in the hoop and bar mills of the American Steel Hoop Company. In the latter part of last week it seemed that the strike would be settled, as the entire Executive Committee of the Amalgamated Association went to New York Friday night, August 2, and were in conference on Saturday with J. P. Morgan, and E. H. Gary, chairman, and Charles M. Schwab, president, of the United States Steel Corporation. It was the purpose of securing a modification of the J. P. Morgan proposition that took the Executive Committee of the Amalgamated Association to New York City, but their trip was fruitless. The conference lasted several hours, and at its close the Amalgamated Association and the United States Steel Corporation were wider apart than at any time since the strike started. The cause of the conference and what took place at it is perhaps best described in an official announcement which was given out by the Amalgamated Association shortly after the conference ended. It is as follows:

"We, the members of the Executive Board of the Amalgamated Association of Iron, Steel and Tin Workers, deeming it incumbent upon us to enlighten the public through the press with reference to the present relations between our association and the United States Steel Corporation, present the following statement: The officials of the United States Steel Corporation, instead of resuming negotiations where they were suspended at the conference held July 11, 12, and 13, have withdrawn the propositions made at that time and are now offering much less than they agreed to sign for then.

"The following is the proposition which the United States Steel Corporation gave us to-day as their ultimatum: It will be observed that the preamble states that the United States Steel Corporation officials will "advise" settlement by the underlying companies:

"Preamble: Conditions under which we are willing to advise settlement of labor difficulty. Proposition. Tin Plate Company—Business shall proceed under contract signed with the Amalgamated Association as of July 1, 1901.

"American Steel Hoop Company.—Company should sign the scale for all the mills owned by the American Steel Hoop Company that were signed for last year.

"American Sheet Steel Company.—Company should sign the scale for all the mills of this company that were signed for last year, excepting the Old Meadow and Saltsburg mills.

STATEMENT OF THE MEN.

"We desire to preface our proposition by directing attention to the fact that it is a modification of that which we offered originally. At the last conference, as at those preceding it, we required signature of the scales for all the mills owned and operated by the United States Steel Corporation, while in the proposition given below we asked that the scale be signed for none but those mills which are organized and where the men ceasing to work have signified their desire to be connected with the Amalgamated Association. This modification has been made because the trust officials declared that we wished to force men into the organization against their will and desire. We therefore asked that the scale be signed for only those men who desire it.

"Proposition of the Amalgamated Association: We, the members of the Executive Board of the Amalgamated Association, hereby present the following proposition as a reply to that received from the United States Steel Corporation:

"Sheet Mills.—All mills signed for last year, with the exception of Saltsburg and Scottdale, and with the addition of McKeesport and Wellsville.

"Hoop Mills.—All mills now known to be organized—viz.: Youngstown, Girard, Greenville, Pomeroy, Warren, Painter, Lindsay & McCutcheon, Clark, Monessen, Mingo, and bar mill, 12-inch, 9-inch and hoop mills of the Cleveland Rolling Mill Company.

"Tin Mills.—All mills except Monessen.

"Note.—All matters of detail to be left for settlement by conference.

"We, furthermore, wish to state that our purpose in coming to New York was not because we doubted our president, T. J. Shaffer, and secretary, John Williams, who have our confidence and indorsement, but in the hope of obtaining settlement of the strike."

A brief *résumé* of the causes which led up to the strike and the negotiations that were held, with a view of trying to settle it, is opportune. In June conferences were held between wage committees of the American Tin Plate Company, the American Steel Hoop Company, Republic Iron & Steel Company, American Sheet Steel Company and the Amalgamated Association. Moderate advances in wages were asked by the Amalgamated Association in the sheet, tin plate, hoop and bar mills, and these requests, with only some slight modifications, were readily granted by the companies. The prosperous condition of the iron trade and the profitable prices readily permitted the advances in wages asked. However, there was another and far more important point involved. The Amalgamated Association, since its memorable defeat at Homestead in the year 1892, and which almost disrupted it, has been steadily losing ground in the mills until in the past year or two, when a slight increase in membership was effected by urgent work on the part of the organization. When the time came this year to settle the scales there was no trouble whatever in arranging the tin plate scales for all the mills of the American Tin Plate Company, with the single exception of the Monessen Works. The scale for all their mills was signed by the American Tin Plate Company, and work continued without interruption from July 1.

With regard to the sheet, hoop and bar mills, however, the situation was entirely different. As noted above, the wage part of the scale was quickly arranged, but a demand made on the part of the Amalgamated on the American Sheet Steel and the American Steel Hoop companies, that not only should they sign the scale for the union mills, but for a half dozen nonunion mills, was opposed. The result was that from July 1 all the union sheet mills of the American Sheet Steel Company, the union mills of the American Steel Hoop Company and three in the Pittsburgh district that heretofore have been nonunion were closed down by order of the Amalgamated Association.

With a view, if possible, of bringing about a settlement of the trouble, another conference was arranged between the wage committees of the Amalgamated Association and the American Sheet Steel Company and American Steel Hoop Company, which was held in the Hotel Lincoln, Pittsburgh, on Thursday, Friday and Saturday, July 11, 12 and 13. At this conference the United States Steel Corporation made a more favorable proposition to the Amalgamated Association than at first, and this is where a serious blunder was made when the Amalgamated refused to accept it. On Saturday night, before the conference adjourned, the representatives of the American Sheet Steel Company agreed to sign the scale for all the union sheet mills and also for the nonunion sheet mills at McKeesport, Wellsville, Old Meadow and Saltsburg. This proposition was refused, and as a result President Shaffer delivered a strike order, calling out all the Amalgamated men in the tin mills of the American Tin Plate Company, and in the three hoop and bar mills of the American Steel Hoop Company in the Pittsburgh district, these being the Painter, Lindsay & McCutcheon and Clark works.

A few days after the strike was declared President Shaffer, who commenced to realize his mistake, in company with John Williams, secretary of the Amalgamated, went to New York for the purpose of getting J. P. Morgan and C. M. Schwab to make another offer of the proposition which Shaffer and his committee turned down on Saturday night, July 13, in Pittsburgh. It is history how Mr. Shaffer was unsuccessful in his mission with Mr. Morgan and Mr. Schwab, but came back

to Pittsburgh with a counter proposition that United States Steel Corporation would sign the scale for all the tin mills of the American Tin Plate Company except Monessen, for all of the mills signed by American Steel Hoop Company last year, and for all the mills of American Sheet Steel Company that were signed for last year except Old Meadow and Saltsburg. This proposition, while not nearly so liberal as the one made before to the Amalgamated, was, nevertheless, accepted by Shaffer and Williams on behalf of the Amalgamated.

When these two officials came back to Pittsburgh a call was sent out for a meeting of the General Executive Committee of the Amalgamated Association, which convened in Pittsburgh on Tuesday, July 30. The proposition made by Mr. Morgan to Shaffer, in New York, was submitted and promptly turned down by the Executive Board. Counter propositions were made to representatives of American Steel Hoop Company and American Sheet Steel Company in Pittsburgh, which, in turn, were referred to New York, and all were refused, and on Friday night the entire Executive Committee, headed by President Shaffer, went to New York and met on Saturday J. P. Morgan, C. M. Schwab and E. H. Gary and other minor officials of the United States Steel Corporation, as related above. No settlement could be reached, and on Saturday night President Shaffer announced that he would get ready to call out every Amalgamated man employed in any of the mills of the United States Steel Corporation.

Other Concerns Called Out.

President Shaffer has issued the strike order, the text of which is as follows:

"Brethren.—The officials of the United States Steel Trust have refused to recognize as union men those who are now striving for the right to organize. The Executive Board has authorized me to issue a call upon all Amalgamated and other union men in name and heart to join in the movement to fight for labor's rights. We must fight or give up forever our personal liberties.

"You will be told that you have signed contracts, but you never agreed to surrender those contracts to the United States Steel Corporation. Their officers think you were sold to them, just as the mills, with contracts and all. Remember, before you agreed to any contract you took an obligation to the Amalgamated Association. It now calls you to help in this hour of need.

"Unless the trouble is settled on or before Saturday, August 10, 1901, the mills will close when the last turn is made on that day.

"Brethren, this is the call to preserve our organization. We trust you and need you. Come and help us, and may right come to a just cause."

The above is about the weakest statement as the cause for a strike that has ever been issued, and President Shaffer and the Executive Committee have put themselves on record as sending out a statement that is untruthful and evidently calculated to deceive the men. President Shaffer starts off by saying that the United States Steel Corporation refused to recognize as union men those who are now striking for the right to organize. This is a clear misstatement of facts. The American Tin Plate Company signed the scale for all their mills except one, the American Sheet Steel Company for all their union mills, and also offered to sign for four nonunion mills, and the American Steel Hoop Company also agreed to sign for all their union mills. In addition, the Amalgamated Association was given the right to organize men in the nonunion mills if it could.

Further on President Shaffer says: "We must fight or give up forever our personal liberty." This is clearly wrong, as the question of personal liberty does not enter into the present contest in any way. In regard to contracts that the men signed, these are just as binding to-day as they were the day they were signed, and none know this better than President Shaffer and his followers. The Amalgamated Association, however, is no respecter of contracts, but has repeatedly violated them, and now promises to go into the business of violating contracts on a wholesale basis. It may well be asked, what is the use of making contracts with a labor organization that violates them on the slightest pretext? No

one can truthfully charge President Shaffer with possessing the virtue of diplomacy. In the last paragraph he announces that the death knell of the Amalgamated Association is sounded if the fight is lost. He says: "Brethren, this is the call to preserve our organization." No truer words were ever spoken, for just as surely as the present fight goes to a finish the Amalgamated Association will be disrupted.

The strike order will affect only the New Castle and Mingo Junction Works of the National Steel Company. The former plant shut down Tuesday, midnight, and is idle. Mingo Junction will work until Saturday.

The Frankstown, Republic and Riverside Works of the National Tube Company are claimed as union mills. The Frankstown Works was formerly owned by the Oil Well Supply Company, and makes skelp, which is worked up in other mills. The Republic Works is also a skelp mill, so that the only inconvenience experienced by the National Tube Company in the shutting down of these two plants will be to lessen the supply of skelp. The Riverside Works, at Benwood, is an important plant, but whether the men will all go out is doubtful.

Most of the mills of the Federal Steel Company, at Milwaukee, Joliet and South Chicago, are union, and these will likely suspend operations on Saturday. Many wild and ridiculous claims are being made by President Shaffer and his followers that he will shut down every mill owned by the United States Steel Corporation, and also the blast furnaces in the two valleys that sell pig iron to the corporation. The Amalgamated men are being misled in this strike by their leaders and will recognize this when it is too late. The extent to which the strike will spread can only be determined when the time comes for the strike order to go into effect.

The number of men who will go out on strike will be very much smaller, and the United States Steel Corporation will not be crippled to the extent hoped for when the strike order was sent out.

The Sheet Mills.

In the meantime the Amalgamated Association has met with two successive defeats, which may go a great way to break the strike. The seat of war in the sheet strike has been the Wellsville works, and Manager D. S. Brookman has made good his assertion that he would run the Wellsville works with nonunion men. Some trouble was experienced at first to get sufficient men to man the works, but new men have been steadily coming in, and a number of the Amalgamated men have deserted the organization and gone back to work, and on Tuesday all of the mills in the Wellsville works were running full and the output is practically as large as before the strike started. The strikers have met signal defeat at Wellsville, and some of them are in jail and others out on bail, for inciting riot. At the Hyde Park works of the American Sheet Steel Company the Amalgamated has also met with defeat. This works has been idle since last December, owing to the putting in of a new engine, delivery of which was very hard to obtain on account of the crowded condition of the engine works. However, the new engine has been installed and the plant put in first-class shape, and on Monday afternoon, August 5, the works were put in operation to full capacity, under the management of E. W. Pargny, who is manager for the American Sheet Steel Company in the Pittsburgh district. All the mills in the Kiskiminetas Valley, which are under the management of Mr. Pargny, are nonunion. These embrace the works at Vandergrift, Apollo, Old Meadow, Scottdale, Saltsburg, Leechburg and Hyde Park, and in these works more than 50 per cent. of the output of the American Sheet Steel Company is made. While nothing official has been given out, it is probable that the Wood works at McKeesport, which have been closed since July 1, will be started in a short time. Many of the men are tired of being idle and have signified a desire of returning to work as soon as possible. It is not anticipated that there will be much difficulty in getting sufficient men to operate these works, which are the second largest owned by the American Sheet Steel Company.

Some points in connection with the sheet mill strike

deserve consideration. It is asserted by the Amalgamated Association that the American Sheet Steel Company had "stolen" the Scottdale and Saltsburg mills, which had been idle for a number of months. There was an understanding between the two organizations that after July 1, 1900, mills formerly run as union mills would be run as union mills when started up. If, however, the Amalgamated Association interfered by trying to organize lodges in nonunion mills, then the American Sheet Steel Company would be entitled to interfere with the union mills of the Amalgamated. After proof of tampering with nonunion mills had been established by the Sheet Steel Company, the latter converted the Scottdale and Saltsburg plants.

The fact is acknowledged that prior to the formation of the American Sheet Steel Company many abuses had crept into the Western sheet trade. There were inequalities in rolling finer gauges than those for which the men were paid. There were company stores, often run by officials of the mill. These irregularities were swept away when G. G. McMurtry, the present president, took hold. In the nonunion mills a deliberate system of promoting by merit has been carried forward steadily. In union mills any vacancies in the higher ranks are filled by appointment from the ranks of the unemployed members of the union, not always, by any means, the most efficient men.

The Amalgamated Association has also made secret bargains, in which discrimination has been practiced. Thus, before the consolidation of the sheet interests, the management of the Old Meadow Rolling Mill Company asked for a rebate on wages, on the ground that they had some very low priced contracts. Shaffer was called in and sanctioned a rebate of 20 per cent. in wages of all the tonnage men, and 10 per cent. of all the day hands.

A good deal of wild talk is being indulged in about the number of men called out by the strike. Thus, we have been told that 25,000 and even 50,000 men of the American Sheet Steel Company are out of work. The fact is that all the plants employ about 9000 men.

The Tin Plate Mills.

The strike affects the American Tin Plate Company more seriously than any of the constituent concerns of the United States Steel Corporation. All the tin mills of the concern have been closed since the night of July 13, with the single exception of the Monessen works—that is, in the rolling and heating departments, but the tin house employees worked up the black plate that was on hand when the strike was declared. This, however, has about been exhausted and very little work is being done in any of the tin mills of the American Tin Plate Company. The situation, however, will probably be relieved in a short time by the fact that the American Tin Plate Company are importing 6000 tons of black plate from Swansea, Wales. This black plate is expected to reach New York this week and will be distributed among the various plants of the American Tin Plate Company, and will be followed by further importations of larger amounts. It is believed that the tin house men, who belong to the National Protective Association of Tin Plate Workers and whose scale has been signed, will not break their contracts with the American Tin Plate Company, but, on the other hand, it is likely these men will work up this black plate, and if so it will help out the American Tin Plate Company on their contracts to a very great extent. If the tin house men refuse to work this black plate they will break their agreement, and if this is done the United States Steel Corporation will likely refuse to have any dealings whatever with this organization in the future. It is possible the American Tin Plate Company may import tin andterne plate from the other side, but this has not been fully determined upon. If such a course were pursued it would mean a loss to the American Tin Plate Company on every box, as the price obtained under their contracts would be less than the cost of laying down foreign plate at tidewater points. The next two or three days will bring out some very important developments in the strike and make the situation, as regards the strength of the Amalgamated Association, much clearer than it is now.

Clark Mill Started.

PITTSBURGH, PA., August 7, 1901.—(By Telegraph.)—This morning the American Steel Hoop Company started the Clark mills and by the end of the week the whole plant will be running. The 10 and 12 inch mills were started with full crews, and other departments will be started as soon as they can be gotten ready. This is the first effort of the American Steel Hoop Company to start their idle mills in this city. The Painter and Lindsay & McCutcheon mills may be started next week.

The American Federation of Labor.

WASHINGTON, D. C., August 6, 1901.—A significant development in connection with the strike in the sheet, bar and hoop mills was a conference here on the 6th inst. between President Shaffer, Secretary Williams, D. I. Davis, W. F. Tighe and John Chappell, representing the Amalgamated Association of Iron and Steel Workers, and Secretary Frank Morrison of the American Federation of Labor, the principal official of that organization in Washington at the time. The purpose of the conference was to discuss the extent to which the Federation of Labor might participate in the strike should the Amalgamated Association call for assistance. The conclusion reached appears to have been to the effect that it would be unwise for the Federation to take any active part in the strike, and that if the Amalgamated Association should appeal for aid the policy of the Federation in response should be determined by a meeting of the full Executive Council. The conclusion reached at the conference is believed to be fairly reflected in the statement subsequently made by Secretary Morrison, who said:

"If the antagonism of the trust reaches such proportions that the American Federation of Labor is forced to come in and protect the recognized rights of organized labor President Gompers undoubtedly will call the Executive Council of the Federation together to take all measures necessary. The affiliated organizations of the Amalgamated Association have the right to call on the Federation for moral and financial assistance."

Concerning the possibility of the Federation ordering a sympathetic strike, Secretary Morrison declared that under the form of organization adopted the Federation never ordered a strike. "The organizations affiliated with the Federation, however," he added, "have complete autonomy, and the membership of these unions vote on all propositions and decide for themselves. Of course the Federation may advise with the unions, and I think such advice usually is followed to the letter."

The members of the general council of the Federation of Labor are at present within a short distance of Washington, and should the Amalgamated Association ask for help the council would convene at once. President Gompers, who has been in the West for several days, is expected to return at an early date. The Federation officials intimate that the first action likely to be taken in aid of the strikers will be the levying of an assessment, amounting to 1 cent per member per week, on all affiliated unions. The constitution of the Federation will permit these levies for not to exceed ten weeks in any one year, and it is therefore the best judgment of the more conservative members of the Federation that it would be a mistake at this time to call out the workers in mills not directly affected. While an extended sympathetic strike would have a disastrous effect upon the interests of large manufacturers, it would cut off the resources of the Amalgamated Association and any other orders that might join such a movement. No secret is made by the labor leaders here of the fact that those who would be called upon to finance a big strike are very anxious that men employed by mills other than those immediately affected shall not be called out. It is conceded that one of the reasons why the machinists' strike collapsed was because financial assistance was not promptly forthcoming when called for in districts where the employers generally rejected the strikers' demands.

W. L. C.

James A. Gunn has resigned as manager of the Clark Machine Works, Turner's Falls, Mass.

OBITUARY.

GEORGE MATHESON.

George Matheson, son of Adam Matheson and Isabella Wright, was born October 27, 1828, at Jedburgh, Roxburghshire, Scotland. He enjoyed the benefit of only a common school education, and in June, 1845, left home and entered the employ as an apprentice of George & Robert Stephenson, the celebrated locomotive and engine builders, at New Castle-on-Tyne, England. He remained with them the full term of five years. He afterward worked a few months in England, but in October, 1850, embarked from Glasgow for America. On the second day after his arrival in New York City he commenced work in the shops of Hogg & Delamater, and subsequently had charge of other works, finally settling down in the employ of the Old Novelty Iron Works, where he remained ten years. He then assumed charge of the erection of engines in the vessels which were fitted out



GEORGE MATHESON.

by the Fulton Iron Works of James Murphy & Co., New York, remaining in that position several years. The Civil War being then in progress, he had charge of all the outside work of that firm, including the fitting out of Government vessels. In 1864 he was appointed superintendent of the East River Iron Works, Samuel Secor & Co., at that time largely engaged in building marine and stationary engines. It was here he first became acquainted with the manufacture of tubing, having built the machinery for the Bergen Tube Mill of New Jersey. In 1869 he entered into an arrangement with parties, afterward incorporated as the National Tube Works Company, to erect works for them in East Boston, Mass., and subsequently as superintendent of the works until 1872, when it was decided to erect a more extensive establishment at McKeesport, Pa. Mr. Matheson took entire charge of the projected works, and they were built under his management. He acted as general superintendent of this establishment until 1880, introducing several improvements in tubing manufacture, and successfully operating Siemens' gas furnaces, which had never been used in America for that purpose, and not successfully in England. In 1880 he removed to Middletown, Pa., and with his sons projected and established the large and successful works of the American Tube & Iron Company, of which his son, James H. Matheson,

now has the general management. Subsequently they built a large Western branch tube works at Youngstown, Ohio. This gave their company a splendid position to compete for both Eastern and Western business, and placed them as the second largest manufacturers in their line. In 1899 their company amalgamated with the National Tube Works Company and other companies under the name of the National Tube Company. A. S. Matheson, eldest son of the deceased, was appointed general manager of this corporation, and he now holds the office of vice-president, in charge of the company's foreign affairs. Quite recently this corporation have become one of the most important subsidiary companies of the United States Steel Corporation. Previous to this consolidation George Matheson continued to take an active part in the business, but he retired from active life after it took place in consequence of failing health.

NOTES.

WILLIAM F. ELLIOT, proprietor of the Novelty Iron Works, Lock Haven, Pa., died on August 4, at his home in that town.

ARCHIBALD SATTLEY, vice-president of the Sattley Mfg. Company, manufacturers of plows and farm machinery, at Springfield, Ill., died July 24, after a brief illness, from pneumonia, aged 63 years.

GILBERT BROWN, proprietor of a foundry and machine shop at Bowling Green, Ky., died on July 26, aged 53 years. He was born in Glasgow, Scotland, and went 20 years ago to Bowling Green, where he established himself in the foundry business in partnership with Albert Colburn.

JOSEPH WHITECAR, one of the oldest and most prominent expert machinists in Philadelphia, died on July 30, at his home in that city, after an illness of three months, aged 80 years. He had carried on the business of machinist and shipsmith for 45 years, and was recognized as a master in all branches of iron work. One of his most famous jobs was the erection on Carrosfoot Reef, Fla., of the largest iron lighthouse in the United States.

PHILIP R. WOODFORD, long identified with the Chicago hardware trade, died at his summer residence at Glencoe, near Chicago, July 31. Mr. Woodford was a director of the Wells & Nellegar Company, wholesale hardware merchants, of Chicago, and participated actively in the management of the affairs of the house. Mr. Woodford was 47 years of age and was born in Massachusetts. His parents removed to Chicago when he was but three years old. Starting in as a boy fresh from school, he was first employed by Miller Bros. & Keep, and afterward became connected with Brintnall, Lamb & Co., who were succeeded by Keith, Benham & Dezendorf. In 1885 he severed his connection with the last named firm and engaged with the Wells & Nellegar Company, becoming one of the directors.

EDWARD FOX LEWIS, son of E. C. Lewis, president of the Farrell Foundry & Machine Company, Waterbury, Conn., and himself a member of that corporation, died on August 1 at his home in Waterbury, after a brief illness from typhoid fever, aged 39 years.

Efforts are being made to resume negotiations looking to a consolidation of the builders of laundry machinery. There are from 15 to 20 concerns in this country who manufacture this class of machinery, but only two of them are very large. They are the Troy Laundry Machinery Company, Limited, of Troy, N. Y., who are capitalized at \$300,000, and the American Laundry Machinery Company of Cincinnati, Ohio, with a capital of \$350,000. Both of these concerns are close corporations, with no outstanding stock. An unsuccessful effort was made several years ago to consolidate the principal builders of this class of machinery.

The new company being organized at Youngstown, Ohio, by Henry Wick and other capitalists are said to have bought about 80 acres of ground outside the city limits of Youngstown and will build a very large plant for the manufacture of steel cars under patents which have been acquired by the company.

MANUFACTURING.

Iron and Steel.

The Titusville Forge Company of Titusville, Pa., have completed plans for extensive additions to their plant. The company manufacture a general line of heavy forgings of every description for marine, railroad and machine work. The business was organized in 1896, and their growth has been so rapid that their plant, which has been nearly trebled in size since that date, is still entirely inadequate to handle the large volume of business offered them, and they have decided to double its capacity. Seven acres of land adjoining their property have been secured, and there will be erected thereon a steel building 400 x 160 feet, equipped with two electric traveling cranes, one of 40 tons capacity and one of 10 tons capacity. In the forge department will be installed a 10-ton steam hammer served by two 40-ton steam cranes. In the machine shop department will be installed a 90-inch, a 50-inch and two 36-inch lathes, a 6-foot planer and a 72-inch crank-boring machine. These additions will give the plant facilities for making forgings of every description, ranging in weight from 10 pounds to 40 tons each.

The regular annual meeting of the stockholders and directors of the Ashland Steel Company, incorporated, Ashland, Ky., was held recently. Directors for the ensuing year were elected as follows: I. A. Kelly, Robert Peebles, Thos. M. Adams, W. B. Seaton, John Russell, Ashland, Ky.; John G. Peebles, Portsmouth; Oscar Richey, B. H. Barr, Ironton. The following officers for the ensuing year were elected: President, Ironton A. Kelly; vice-president, Thomas M. Adams; secretary, B. H. Burr; treasurer, L. R. Putnam.

The Buhl Works of the National Steel Company, at Sharon, Pa., will be enlarged and the capacity increased fully one-half. The plan of removing this plant to the Ohio Works at Youngstown has been abandoned.

The Pittsburgh Wire & Steel Company have bought a farm of 88 acres opposite Monongahela, fronting on the Monongahela River, and about 35 miles from Pittsburgh. This site will be used for the new road, wire and nail mills to be built by this concern and fully referred to in these columns before.

At the annual meeting of the Knoxville Iron Company, Knoxville, Tenn., held recently, the following officers were re-elected: Capt. W. P. Chamberlain, president; T. I. Stephenson, vice-president and general manager; O. A. Brown, secretary and treasurer. The consolidation of the Harriman and Knoxville plants was ratified by the stockholders and the management were instructed to proceed with the erection of the new rolling mill.

The mill building of the Curtis Sheet Steel & Corrugating Company of Zanesville, Ohio, a steel structure 300 x 100 feet, is rapidly nearing completion. The Pawling & Harnischfeger 20-ton crane is completed and in position. Their electric plant is almost ready to start and the crane will be tested in a day or two. All of the materials for their engines, mills and furnaces are on the ground and only awaiting the starting of the crane to be placed in position. The building for their corrugating department is nearly completed. The battery of eight tubular boilers are set and only await steam connections to be ready for operations. A large number of cars of raw material have already been received and the company expect to be rolling sheets by September 1.

The Illinois Tube Works, 45 to 55 Huron street, Chicago, are running their plant to its full capacity in the production of butted tubing. The company have found a steady demand for their output and have purchased additional machinery with which to increase their capacity.

The Ashland Iron & Steel Company, Ashland, Wis., have begun the erection of large charcoal kilns and chemical works for the recovery of by-products in the vicinity of their blast furnace. The battery of charcoal kilns, it is said, will be the largest and most complete of the kind in the world. The primary still house will be 50 x 72 feet, the acetate house 50 x 120 feet and the finishing house 50 x 172 feet. All these buildings will be 28 feet high and all will be built of wood with corrugated steel roofs and sides. The improvements will also include a new boiler house, which will have a boiler capacity as large as that of the present plant.

Advices from Port Townsend, Wash., state that the Pacific Steel Company are making many improvements at Irondale, near that city, where the company have recently acquired the property formerly owned by the Puget Sound Iron Company. They have cleared a large tract of land, erected numerous dwelling houses, refitted the machine shop and rebuilt the blast furnace. All preparations have been made for resuming the manufacture of pig iron, and it is expected that the company will considerably enlarge their manufacturing operations. The company have mortgaged their property for \$500,000 for the purpose of making the additional improvements contemplated.

Union Iron & Steel Company's furnace, Ironton, Ohio, are now manufacturing 10,000 tons Bessemer pig on an order for prompt delivery. This furnace made a most successful run of 30,000 tons of Bessemer iron last year, over 60 per cent. of which was open foundry and only five casts of less than 200 tons of the entire run was off Bessemer. The Tudor Boiler Mfg. Company

of Cincinnati are now erecting at the furnace a battery of Lynn vertical boilers.

The Big Stone Gap Iron Company, Big Stone Gap, Va., are improving their plant with a 500 horse-power Lynn vertical boiler, extra blowing power and hot blast, to increase the output and enable the company to fill orders, many of which are 60 days behind.

The promoters of the Chicago Tinplate & Can Company are considering the comparative advantages of a number of locations which have been offered to them in the vicinity of Chicago. The plant will be a large one and the company will require about 40 acres of land. They expect to effect an organization some time this month and to settle upon a site, after which their plans will probably be announced.

The Emlyn Iron Works, Western Union Building, Chicago, tested their new 8-inch mill last week and started it regularly on Monday morning. This mill is an important addition to the company's plant. It occupies a building specially erected for it and is supplied with its own hot bed and other auxiliaries. The heating furnace is of the new Lauth design, having double the capacity of the usual heating furnace. This mill puts the company in shape to turn out all sizes of small rounds, squares, ovals, bands, &c.

The Minerva Furnace, Wisconsin, is being remodeled, the improvements covering new boilers, new blowing engines, new stacks, stove, &c. The size of the furnace will be 16 x 75, and the capacity 225 tons daily.

The Bear Spring Furnace, at Bear Spring, Tenn., is to blow in on the 10th inst.

The Juniata Furnace, Newport, Pa., was blown out July 20 for a new lining. It is expected to be blown in about October 1.

The Union Furnace of the Buffalo Union Furnace Company, Buffalo, N. Y., was blown out July 30 for repairs.

It is announced that the Olive Furnace, Lawrence County, Ohio, is to blow in August 20.

The large plant of the Tindel-Morris Company, known as Frankford Forge, which has been under construction for some time at the borough of Eddystone, adjoining Chester, Pa., was formally started on the 6th inst, Mrs. L. I. Morris, wife of a member of the company, opening the throttle which started the engine.

General Machinery.

The Fred. M. Prescott Steam Pump Company are making good progress with the new plant which they are building at West Allis, near Milwaukee, Wis. This plant consists of a machine shop, 76 x 165 feet; foundry, 80 x 145 feet; power house, 40 x 50 feet; pattern storage house, three stories high, 40 x 80 feet; pattern shop, 44 x 52 feet; storage shed, 20 x 150 feet; office building, two stories high, 38 x 44 feet. All these buildings will be constructed of brick, except the office building and pattern shop. The largest of the buildings will also have steel framework. The company have hitherto purchased their castings from other parties, but will have their own foundry when the new works are completed. This plant is being erected near the new works of the Allis-Chalmers Company.

The S. Obermayer Company, Cincinnati, Chicago and Larimer, Pa., manufacturers of foundry facing supplies, &c., were the successful bidders on the contract for the cupolas to be delivered to the Brooklyn Navy Yard. These cupolas have a capacity of melting 100 tons of iron a day.

The Jacobson Machine Mfg. Company, Warren, Pa., who commenced business May 1, 1900, manufacture clutch pulleys, gas regulators, air compressors and gas soldering furnaces, besides doing general jobbing and repair work. They are at present paying special attention to the installation of power plants and are subcontracting to supply the Warren Street Railroad Company the shafting, floor stands, clutch pulleys, cut off couplings, pulleys, &c., for their electric railway from Warren to Sheffield. They have a standing order from Struthers, Wells & Co., Warren, for all the clutch pulleys and gas regulators required in their entire output of gas engines. The business of the company continues to grow steadily.

The Exeter Machine Works, Exeter, N. H., have received an order from the Malden Electric Company, Malden, Mass., for one of their largest sized steam fans, dimensions of housing 18 feet 6 inches, width of wheel 8 feet, to be delivered in running condition on or before August 15. The fan is to be used for a water cooling tower designed by Francis H. & Charles W. Boyer, mechanical engineers. They also recently shipped a 110-inch steam fan to the Hazleton, Pa., Electric Light & Power Company, to be used in their Freeland plant.

The Gelfer Mfg. Company, Waynesboro, Pa., will increase their capital stock from \$656,000 to \$750,000 in order to add to their capacity for manufacturing and storing threshers, traction engines, saw mills, &c. The increase of stock has all been taken up.

The business of George P. Clarke, manufacturer of Clarke exhaust fans, at Windsor Locks, Conn., has been incorporated under the name of the George P. Clarke Company, and will be conducted along the same lines and under practically the same management as heretofore. The officers are George P. Clarke,

president, and George E. Clarke, secretary, treasurer and general manager.

The Vaughn Machine Company, Peabody, Mass., manufacturers of machinery for working hides, skins and leather, have plans for a large three-story brick addition to the machine shop at their plant in South Peabody. The present building is a three-story brick structure, 300 x 55 feet, and the addition will increase the length of the building 130 feet, running back on the end 145 x 50 feet, more than doubling the present capacity. The company are building a one-story wooden building about 100 x 75 feet, which will be used for rumbling, chipping, snagging and cleaning castings, and for a storehouse.

John Patterson, representing one of the largest shipbuilding plants in Scotland, is in this country inspecting the various ship yards and steel works, especially their equipment. On his visit to the various plants where pneumatic tools and appliances are extensively used, he was so impressed with those manufactured by the Chicago Pneumatic Tool Company that he visited their plant at Olney, Philadelphia, and the Boyer Machine Company, Limited, at Detroit, Mich.

The Tyrone Foundry & Machine Company, Tyrone, Pa., have been kept busy the whole of the year with repair work, mostly of rock crushing machinery. The company expect to conclude an important contract to build lime kilns for parties in Canada.

The Novelty Iron Works, Punxsutawney, Pa., who were commenced about a year ago, are owners of the Houghton patent reversible pump valve stem and the Houghton patent combination piston rod. They now do principally repairing and diamond drill work, but within 60 days intend to commence the manufacture of the Mackinzie patent window sash lock. They are just commencing to put up a foundry which will be 60 x 40 feet. The works are kept fully employed at the present time.

The Vilter Mfg. Company, builders of refrigerating and ice making machinery, Corliss engines, &c., Milwaukee, Wis., have recently closed contracts for refrigerating and ice making machinery with parties in Washington, D. C., Kansas, Nebraska and Wisconsin, the machines ranging from 35 to 125 tons capacity. Their engine business has been very active, covering a number of large cross compounds for Illinois, Ohio and Louisiana and single engines for Wisconsin, Louisiana and Texas.

The George Challoner's Sons Company, Oshkosh, Wis., are making considerable improvements in their plant. The company make a specialty of the manufacture of ice making and refrigerating machinery, but also turn out saw mill machinery and build machinery to special designs. They have made an addition to the works, two stories high, 40 x 90 feet, the ground floor of which is mainly used as an erecting department. This is equipped with a 6-ton traveling crane and such tools as are essential in completing machines. The second floor will be used as a wood working department and will have a complete equipment of wood working machinery. The foundry has been considerably improved, the company manufacturing all their own castings.

The Berlin Machine Company, at Beloit, Wis., who had contemplated removal to some other point to secure more room for their operations, have made satisfactory arrangements and abandoned the intention to locate elsewhere. The city has closed a street to accommodate the factory. The company will now improve their plant by the erection of a shipping room, 198 x 100 feet; addition to foundry, 198 x 85 feet, and two machine shops, 310 x 75 feet. Considerable new equipment will be installed.

The Manistee Iron Works, at Manistee, Mich., were burned on the evening of July 31, with an estimated loss of \$50,000, the insurance covering two-thirds of this amount. The company are large manufacturers of engines, pumps and vacuum salt pans, having a considerable export trade.

The Salem Iron Works, at Salem, Oregon, which have been closed for a year, will be reopened by James Gill. Mr. Gill gained his experience in the iron business in Pennsylvania.

The Norwood Engineering Company, Florence, Mass., have recently enlarged the machine shop and built new offices, the latter having Roebling's construction throughout. They are now enlarging the foundry and installing additional cranes, stacks and other equipment, all of which has been purchased.

Engines and Boilers.

Westinghouse, Church, Kerr & Co., who are selling agents for the Westinghouse Machine Company of Pittsburgh, have secured a contract from Graham Brothers of Stockholm calling for the shipment of one 330 horse-power compound vertical engine, one machine of the same description having a capacity of 100 horse-power, and one simple vertical engine of 30 horse-power. These engines are intended to be installed in an electrical power plant in the Swedish capital. The Graham concern, who are said to be one of the largest handlers of imported machinery in Northern Europe, are at present reported to be making some good sized purchases of machinery, tools, &c., in this market.

The Carlin Machinery & Supply Company of Allegheny, Pa., have shipped to Davis & Harris of Beaver a 125 horse-power water tube portable boiler, to be used in the Beaver Valley quarries. This is said to be the largest portable boiler used in that region for quarrying purposes. It operates hoisting, rock

drills and other machinery. The Carlin Machinery & Supply Company have also shipped a 30-ton locomotive to Garysburg, N. C., to be used by the Garysburg Lumber Company.

The Larzelere Machine Company, Williamsport, Pa., have contracts to build engines on hand that will occupy them for several months. They are making two 125 horse-power automatic engines and boilers for the Hambleton Leather Company, Hambleton, W. Va.; one 125 horse-power automatic engine and boiler for Ewart & Lake, Groveland, N. Y.; one 50 horse-power automatic engine and boiler for Garber & Co., New Bloomfield, Pa.; one 30 horse-power engine for H. L. Gruver, Hazelton, Pa.; one 10 horse-power automatic engine for Aumen & Garrett, Baltimore, Md.; four 30 horse-power engines and boilers for the Chase Turbine Company, Orange, Mass.; one 20 horse-power engine and boiler for Dreese & Wayner, Mapleton, Pa., and one 15 horse-power engine and boiler for C. M. Smithers, Milroy, Pa.

The Central Iron Works, Quincy, Ill., have added to their business the manufacture of gas and gasoline engines. These engines are made in a range of sizes from 2½ to 20 horse-power.

The Marinette Iron Works Mfg. Company have rejected a proposition to remove to Warren, Pa., having decided to retain their location in Marinette, Wis. It is stated that the people of Warren offered \$150,000 and a tract of land, but it was considered insufficient to pay the expenses of removal and the construction of a new plant. The company are doing a very successful business in building gas engines and have also secured the right to manufacture the Kimpling rock crusher, which is a machine of new and improved design, for not only crushing stone to small size but also grinding it into flour, if desired. Should the rock crusher prove as successful as the gas engine, it will be necessary to enlarge the works.

The Riverside Iron Works Company of Armour Station, Kansas City, Kan., builders of engines, ice machines, packing house and mining machinery, have had a curious experience. On May 7 their machinists and blacksmiths went out on a strike. When an attempt was made to supply their places with nonunion men the strikers began a system of picketing, intimidations, threats and assaults. An effort was made to get an injunction against them through the United States courts; but, being a Kansas corporation with their plant in the same State and the Kansas laws being very unfriendly to corporations, they were not successful. They then concluded to have their Kansas charter annulled and take out a new charter in the State of New Jersey. The change proved very beneficial, as they have successfully enjoined the strikers from molesting them. They have more men employed in their machine shop now than they have had at any time since the strike was inaugurated, and things are getting in better shape daily.

Buildings and Bridges.

The Boston Bridge Works, 70 Kilby street, Boston, announce that the buildings for their new plant at Cambridge, Mass., are all completed and the machinery nearly all installed and running. In a circular to the trade illustrating the plant they say "the facilities of our former works for executing the high grade and large range of work for which we have always maintained a high reputation are greatly surpassed in the large, modern and fire proof plant just completed." The company are prepared to design and produce bridges, buildings and structural steel work of all kinds, also railroad turntables and traveling cranes.

Foundries.

The Interstate Foundry Company, Cleveland, Ohio, will make a large addition to their foundry, to be used for making heavy castings. The output of the concern now is light castings.

The new plant now being erected by the Co-operative Foundry, at Junction avenue and Henrietta street, on the Pere Marquette Railroad, Detroit, Mich., will consist of a foundry building, 125 x 50 feet, which will be equipped with a 20-ton and a 15-ton steel crane, and one 10-ton and one 30-ton cupola; core room, 20 x 30 feet, with two large ovens; machine shop, 85 x 35 feet, especially fitted up for making their special cast iron pulleys; pattern shop, 35 x 65 feet; drafting room, 35 x 20 feet, and pattern storage room, 50 x 50 feet. The shops will be equipped with all modern conveniences, lantern roof running the entire length of the foundry. The company expect to be in their new buildings in about 60 days.

The Glamorgan Pipe & Foundry Company, Lynchburg, Va., manufacturers of cast iron gas and water pipe, special castings, &c., have leased the large pipe works of the Radford Pipe & Foundry Company, at Radford, Va., which has a capacity of from 125 to 150 tons per day. The company advise us that the latter works are in active operation, with orders ahead for all the cast iron pipe they can furnish for some weeks, and that they are making preparations to start up the special foundry and will soon be in shape to turn out heavy loam castings of almost any description.

C. A. Moffett and A. Banholzer, under the firm name of Moffett & Banholzer, have opened a foundry, 54 x 90 feet, with pattern shop 30 x 50 feet, at Tenth avenue and Thirty-second street, North Birmingham, Ala. The firm will make gray iron castings up to 10 tons.

The Rockford Malleable Iron Works, Rockford, Ill., are erect-

ing a new building, which will add about one-third to the capacity of the plant. They are also putting in an additional air furnace for melting iron. The foundation for this furnace has been laid entirely on cement, which is a departure from the usual practice.

The main building and machinery of the Buhl Malleable Company, Detroit, Mich., were considerably damaged by fire on the 1st inst. The loss is covered by insurance.

Hardware.

The Cleveland Rivet & Forging Company of Cleveland have been organized by Charles Patterson and Charles A. Patterson of the Patterson Foundry Company, and Frank H. Handy, formerly with the Ajax Mfg. Company of that city. They have established a factory and offices at Mason and Beldon streets and will produce hot rivets, special forgings for railway and other work and will devote considerable attention to special up-setting work. They are now getting out tools and installing machinery and will be ready for business in about 30 days.

Jenkins Iron & Tool Company, Howard, Pa., are enlarging their chain factory and are also erecting an additional train of rolls. They report all departments as busily employed.

The annual meeting of the stockholders of the Bristol Brass & Clock Company, Bristol, Conn., was held on the 24th ult. The following Board of Directors was chosen: J. H. Welch, Pierce N. Welch, New Haven; Henry F. English, New Haven; George S. Brown, New Britain; J. R. Holley, George W. Mitchell and Charles S. Treadway. The directors elected the following officers: President, J. Hart Welch of Forestville; secretary and treasurer, Julian R. Holley; assistant treasurer, George S. Brown.

At the annual meeting of the directors of the Gartland Foundry Company, Cleveland, Ohio, the following officers were elected for the ensuing year: J. Fels, president; Emil Joseph, vice-president; C. M. Miller, secretary and treasurer; C. M. Miller, general manager. It was also voted that the name of the concern be changed from the Gartland Foundry Company to the Superior Foundry Company.

The Ford Bit Company, Holyoke, Mass., have reorganized with enlarged capital stock under the style of the Ford Auger Bit Company, and new and expensive machinery will shortly be installed. Business this year thus far is reported as exceeding last year's for the same period by about 30 per cent., and the outlook is regarded as very promising.

The works of the Ironton Tack Company, Ironton, Ohio, are almost completed and will be started up about September 1. The concern have nail and tack machines for making small nails and tacks of all kinds, shoe nails, cobbler nails and brads, double pointed tacks and staples. The concern have received a large order for the Roth patent clinch head shoe nail. The plant is equipped with a 40 horse-power gas engine, and more machines will be installed later.

Miscellaneous.

Lewis A. Coleman has been appointed assignee of the Monarch Mfg. Company, Indianapolis, Ind. The company were organized in 1897 with a capital stock of \$75,000 and have for a long time conducted a successful business in the manufacture of acetylene gas generators, wire fencing, wire and brass novelties. It is expected that the company will be reorganized. In the meantime manufacturing operations will be continued under the direction of the assignee.

The plant of the Simplex Railway Appliance Company, at Hammond, Ind., was burned on the 2d inst., with a loss of \$50,000, partly covered by insurance. The fire was caused by a defect in the apparatus governing the supply of fuel oil. The company are large manufacturers of trucks and other railway appliances made of pressed steel. Arrangements will be made for the early resumption of work in temporary quarters, as the company have numerous orders to be filled.

The factory of the Western Rawhide & Belting Company, at Hammond, Ind., was burned on the 2d inst. The loss is estimated at \$40,000, fully covered by insurance.

The Patton Clay Mfg. Company, Patton, Pa., have been crowded with orders for sewer pipe since April 1, and have contracts on hand that will keep them in much the same condition for the next three months.

The Venetian Iron Company, 225-227 East Ninth street, New York City, recently incorporated, have taken up an existing New Jersey corporation and will manufacture light iron work. They propose shortly to place on the market tools for grille work, elevator cages and iron railings. The officers are Theodore L. Stewart, president, and Francis W. Kennedy, treasurer.

The City Forge & Iron Works of Dayton, Ohio, Andrew Plocher, proprietor, have moved to their new factory at 418-420 E. First street. They produce architectural and ornamental iron work and have added machinery for making wire guards.

The Fred D. Johnson Company, 284 Pearl street, New York City, have incorporated with a capital of \$10,000, to manufacture steam heating apparatus and machinery. The directors are Fred D. Johnson and W. L. Ruston of New York City and G. A. Pratt of Brooklyn.

The Youngstown Works of the American Can Company, Youngstown, Ohio, will be moved to Cleveland. It was expected at the time the American Can Company were organized that the works at Youngstown would be much enlarged, but this plan has been changed and the plant will be moved to Cleveland, being consolidated with the works there.

The New Process Raw Hide Company, Syracuse, N. Y., have received a contract from the United States Mint at Philadelphia for six pinions 16 inches in diameter, 6 inches face, a part of the equipment of the new mint building, the machinery for which is just being installed. They are to be used for transmitting power from a 50 horse-power motor to a 10 x 9 inch rolling mill and will run 175 revolutions per minute, meshing into a 60-inch iron gear. Six armature pinions for the same motors were shipped by the company a short time ago. They are 12-2-3 inches diameter, 4 inches face, and will run at a speed of 325 revolutions per minute. The company have just made a shipment of 24 pinions to the Sao Paulo Lighting & Traction Company, Sao Paulo, Brazil.

The Mt. Pleasant Coke Company have about completed a group of 200 coke ovens near Hecla, Pa., and expect to have them in operation by August 1. The ovens are of the beehive type and will have a capacity of from 25 to 35 cars daily. Low phosphorus standard Bessemer and foundry coke will be made. W. A. Wilson of Greensburg, Pa., president of the company, is also a director of the Tri-State Coal & Coke Company, who will act as selling agents in Ohio, West Virginia and Pennsylvania.

The D. Wilcox Mfg. Company, Mechanicsburg, Pa., have been crowded with work since the first of the year, and now, which is generally a dull season with them, they are running full time and have had to put on extra hands. They have secured large contracts for special forgings that will keep one department busy six or eight months.

The W. J. Clark Company of Salem, Ohio, report that they have succeeded in securing a sufficient stock of sheet and plate steel to keep their full force employed on both regular and special work that may be offered during the next three or four months. They are, therefore, that far independent of the effect of the sheet steel strike, and can probably execute any orders promptly that may come in that time. While the supply of material on hand holds out there will be no advance in prices for work, whatever the condition of the market for sheets and plates may be.

In order to obtain better railroad facilities and more room, Theodore Kiertz & Son, smelters and refiners of ore, dross and metal, St. Louis, Mo., have removed their works from 2935-2937 Park avenue to Tenth and Poepping streets, where they have 2 acres of ground, purchased early in the year, upon which is a building 100 x 100 feet, which will be enlarged as business requires. The new plant is situated on the Oak Hill branch of the Missouri Pacific & Iron Mountain Railroad.

Tuscora Steel Company.—The Tuscora Steel Company are building at New Comerstown, Ohio, a four-mill sheet plant and will make black and galvanized sheets, having also under erection a galvanizing plant. Edward E. Erickson, consulting engineer, Pittsburgh, is drawing plans for the entire plant, and is also building the heating and annealing furnaces and the gas producers. It will probably be 90 days before the mill is ready to start.

The Frank C. White Tool & Supply Company, Incorporated, have been organized, with headquarters at 137 and 139 Bank street, Cleveland, Ohio, to do a general business in factory and mill supplies. They represent the following lines, with which Frank C. White has long been identified: B. F. Sturtevant Company, Boston, Mass., blowers, exhausters, forges, &c.; Norton Emery Wheel Company, Worcester, Mass., emery and corundum wheels; Shultz Belting Company, St. Louis, Mo., rawhide belting and lace leather; Brown & Sharpe Mfg. Company, Providence, R. I., small tools and cutters; Detroit wood split pulleys and Wing's high speed graphite babbitt metal.

At Pittsburgh an appeal has been taken from the United States Circuit Court to the United States Circuit Court of Appeals in the case of the Lake Superior Consolidated Mines against the Salem Iron Company. A verdict of \$40,000 was found against the defendant. There were 44 specifications of error alleged.

A neat, well illustrated pamphlet has been issued, entitled "Niagara Falls Power," descriptive of the famous power plant and of the different works which utilize it.

The Iron and Metal Trades.

The calling out of the union men in all the plants of the United States Steel Corporation not thus far affected will considerably extend the trouble and will affect quite a fresh line of products.

So far as the Illinois Steel Company are concerned, it may be noted that the Joliet and Milwaukee works are strictly union. The former turn out Steel Billets, Wire Rods, Spikes, Splice Bars, Track Bolts, and some sizes of Steel Bars. The Milwaukee Works largely make Steel Merchant Bars, Agricultural Shapes, and a large quantity of Light Steel Rails. Of the South Chicago Works, the union is supposed to control the Bessemer and Steel Rail shops, while the Open Hearth and Plate mills are nonunion.

The Shenango Sheet Bar plant of the National Steel Company, at New Castle, has already closed down, and the Mingo Junction Steel plant of the same company is also rated union.

The National Tube Company count among their mills as union the Frankstown and the Republic Iron Works, both chiefly engaged in making Skelp, and the Riverside Works at Benwood, near Wheeling, an important Tube plant.

It will be observed, therefore, that additional capacity will be cut off in Steel Bars, that some important Steel plants may be shut down, that one large Rail mill is to suffer, that considerable capacity for producing Track Material will be stopped, that there may be some embarrassment about an adequate amount of Skelp and of Tubes. The Wire, Structural and Plate trades are not affected.

In anticipation of possible trouble at South Chicago the Ohio plant at Youngstown has been fitted up to make Rails.

So far as the mills already affected by the strike are concerned, the manufacturers have made some gains. The Hyde Park Sheet mill has been started nonunion, and to-day the Clark Hoop mill resumed work.

The position of the manufacturers is an exceedingly strong one, backed as it is by an underwriting syndicate which has thus far called only 12½ per cent. out of \$200,000,000. Where once there was the ever threatening danger of individual makers breaking away, all are now a unit. On the other hand, it will not do to underrate the strength of the men. The skilled rolling mill men, who alone belong to the association, have had prosperous years. The unskilled men will probably have very little trouble in finding other work, in view of the general scarcity of labor.

The most difficult set of men to replace are probably the employees in the rolling mills of the American Tin Plate Company. They are skilled men, and, since the majority are Welshmen, are thoroughly imbued with the union spirit. It is reported that a considerable quantity of Black Plate has been ordered for importation, and the arrivals of foreign Tin Plate are also beginning.

There are no special features in the trade at large, except that prices in the threatened lines are climbing.

A Comparison of Prices.

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

	Aug. 7, 1901.	July 31, 1901.	July 10, 1901.	Aug. 8, 1900.
PIG IRON:				
Foundry Pig, No. 2, Standard, Philadelphia	\$14.75	\$14.75	\$14.75	\$16.25
Foundry Pig, No. 2, Southern, Cincinnati.....	18.00	12.75	12.75	14.50
Foundry Pig, No. 2, Local, Chicago	15.00	15.00	15.00	16.00
Bessemer Pig, Pittsburgh.....	15.75	15.75	16.00	16.00
Gray Forge, Pittsburgh.....	13.75	13.75	13.50	14.00
Lake Superior Charcoal, Chicago..	17.00	17.00	17.00	20.00
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh (nom)....	24.50	23.50	24.00	18.00
Steel Billets, Philadelphia (nom)...	25.50	26.00	.....	20.50
Steel Billets, Chicago, (nom).....	.....	.....	.....	20.00
Wire Rods (delivered).....	36.00	36.00	36.50	35.00
Steel Rails, Heavy, Eastern Mill..	28.00	28.00	28.00	35.00
Spikes, Tidewater.....	1.80	1.80	1.80	2.00
Splice Bars, Tidewater.....	1.50	1.50	1.50	2.00
OLD MATERIAL, PER GROSS TON				
O. Steel Rails, Chicago, gross ton.	13.00	13.00	12.50	9.50
O. Steel Rails, Philadelphia.....	15.75	15.75	.....	13.00
O. Iron Rails, Chicago, gross ton.	19.00	19.00	18.50	12.50
O. Iron Rails, Philadelphia.....	19.00	19.00	.....	14.00
O. Car Wheels, Chicago, gross ton.	16.50	16.50	16.50	15.00
O. Car Wheels, Philadelphia.....	16.50	17.50	.....	17.00
Heavy Steel Scrap, Chicago, g. ton	12.00	12.00	12.50	9.00
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia...	1.55	1.55	1.55	1.25
Common Iron Bars, Chicago.....	1.60	1.60	1.40	1.30
Common Iron Bars, Youngstown.	1.45	1.45	1.40	1.25
Steel Bars, Tidewater.....	1.60	1.60	1.60	1.15
Steel Bars, Pittsburgh.....	1.40	1.40	1.40	1.00
Tank Plates, Tidewater.....	1.75	1.75	1.75	1.50
Tank Plates, Pittsburgh.....	1.60	1.60	1.60	1.10
Beams, Tidewater.....	1.75	1.75	1.75	2.65
Beams, Pittsburgh.....	1.60	1.60	1.60	1.90
Angles, Tidewater.....	1.75	1.75	1.75	1.95
Angles, Pittsburgh.....	1.60	1.60	1.60	1.80
Skelp, Grooved Iron, Pittsburgh..	1.90	1.80	1.89½	1.25
Skelp, Sheared Iron, Pittsburgh..	2.00	1.90	1.90	1.25
Sheets, No. 27, Pittsburgh.....	3.50	3.10	2.90	2.85
Barb Wire, f.o.b. Pittsburgh.....	2.90	2.90	2.90	2.80
Wire Nails, f.o.b. Pittsburgh.....	2.30	2.30	2.30	2.30
Cut Nails, Mill.....	2.00	2.00	2.00	1.98
METALS:				
Copper, New York.....	16.50	16.50	17.00	16.50
Spelter, St. Louis .....	.....	3.80	.....	4.00
Lead, New York.....	4.37½	4.37½	4.37½	4.35
Lead, St. Louis.....	.....	4.27½	.....	4.30
Tin, New York.....	27.50	28.00	27.25	31.65
Antimony, Hallett, New York....	8.75	8.75	8.75	9.50
Nickel, New York.....	60.00	60.00	60.00	55.00
Tin Plate, Domestic Bessemer, 100 lbs., New York.....	nom.	.....	4.19	4.84

Chicago.

1205 FISHER BUILDING, August 7, 1901.—(By Telegraph.)

The failure of the attempt to settle the strike in the mills of the United States Steel Corporation must have some adverse effect on business, but so far the visible influence has not been serious. Prices have advanced on such products as are made very scarce by the strike, as, for instance, Sheets, Tin Plate and Hoops, while Bars are considerably firmer, and those who need supplies of all such material in the near future are becoming concerned over the prospect. On the other hand, those who contemplate new enterprises are disposed to proceed cautiously until the full account of the strike is developed. Grave apprehension exists that it may spread to so many works that it will affect the business of the entire country. It is to be hoped that the apprehensions will not be realized and that the strike will be confined within its present limits. The labor troubles in this city have not yet ended. Machinery manufacturers whose men are still on strike and the foundrymen in a like condition have opened their doors, and are securing some workmen, but the progress made is slow, as the strikers are vigorously exerting themselves to prevent others taking their places.

Pig Iron.—The most important transaction of the week was the purchase of about 3000 tons of Malleable Bessemer by a large local consumer. This will cover his requirements for about six weeks. This is an illus-

tration of the manner in which consumers are covering their wants. The foundrymen who are most employed and for whose products the sharpest demand exists are simply purchasing enough to insure them from being cramped for supplies. Small purchases of Foundry Pig Iron are being made, but in every case the buyer is urgent for quick delivery. The foundries are all so short of stock that as soon as the molders' strike is settled it is expected that considerable buying will be done. Prices show no change. The local furnaces are still so well supplied with orders that they are not accumulating stock, while Southern makers seem to be doing so much better in other markets that they are exerting no pressure in this district. We quote as follows:

Lake Superior Charcoal.....	\$17.00 to \$18.00
Local Coke Foundry, No. 1.....	15.50 to 16.00
Local Coke Foundry, No. 2.....	15.00 to 15.50
Local Coke Foundry, No. 3.....	14.50 to 15.00
Local Scotch, No. 1.....	15.75 to 16.25
Ohio Strong Softeners, No. 1.....	16.00 to 16.50
Southern Silvery, according to Silicon.....	14.90 to 15.15
Southern Coke, No. 1.....	14.65 to 14.90
Southern Coke, No. 2.....	14.15 to 14.40
Southern Coke, No. 3.....	13.65 to 13.90
Southern Coke, No. 1 Soft.....	14.65 to 14.90
Southern Coke, No. 2 Soft.....	14.15 to 14.40
Foundry Forge.....	13.15 to 13.40
Southern Gray Forge.....	12.65 to 12.90
Southern Mottled.....	12.15 to 12.40
Southern Charcoal Softeners, according to Silicon.....	15.00 to 16.50
Tennessee Silicon Pig.....	16.00 to 17.00
Alabama and Georgia Car Wheel.....	19.90 to 20.50
Malleable Bessemer.....	to 16.50
Standard Bessemer.....	17.50 to 18.00
Jackson County and Kentucky Silvery, 8 per cent. Silicon.....	15.75 to 16.25

Bars.—The general expectation that the strike in the mills of the American Steel Hoop Company would be settled caused the demand to fall off to some extent last week. This influenced some of the Bar Iron manufacturers to get slightly lower prices on such business as offered. The developments at the close of the week, however, changed the situation very decidedly and prices are again firm on the basis of those last quoted. Inquiries are heavy, the fact having certainly been disclosed that many large consumers have by no means covered their full requirements for the last half of the year. Mill shipments are quoted at 1.55c., Chicago, for either Bar Iron or Steel Bars for delivery far in the future. But for anything like early shipments 1.60c. is being freely paid, and in cases as much as 1.70c., and especially for Steel, which seems to be particularly scarce. Light hoops are quoted at 2.15c., base, Chicago, for mill shipment by the leading producers, but none are to be had at that price and 2.40c. to 2.50c. would have to be paid to secure them. Heavy drafts are still being made on jobbers' stocks. Large manufacturing consumers are drawing supplies in this way because of slow deliveries by mills. Assortments are badly broken and the situation seems destined to get worse instead of better unless the strike soon ends. Small lots from stock are quoted at 1.90c. to 2c. for Bars, and 2.40c., base, for Hoops.

Structural Material.—A contract has been placed for a new building by the Western Electric Company, which will take 1000 tons. Quite a number of other buildings had been expected to be ready for letting by this time, but for various reasons progress is slow, although it is certain that they will be placed under contract in the near future. The general demand for Structural Shapes is excellent, but the mills are so crowded with work that they are not promising early delivery. The local yards are doing a heavy business, the leading companies being at least three weeks in arrears. Mill shipments are quoted as follows: Beams, Channels and Zees, 15 inches and under, 1.75c.; 18 inches and over, 1.85c.; Angles, 1.75c. rates; Tees, 1.80c.; Universal Plates, 1.75c. to 1.85c.; small lots of Beams and Channels from local yards are quoted at 2.25c.; Angles, 2c. rates; Tees, 2.15c.

Plates.—A fair demand is noted for mill shipments, but the volume of business is hardly as large as during recent weeks. The mills are reported to be making somewhat better deliveries. The demand on jobbers' stocks is not only heavy, but has perhaps never been surpassed in the history of the local trade. Prices are firm. Mill shipments are quoted as follows: Tank Plate, 1/4-inch and heavier, 1.75c. to 1.80c., Chicago; Flange, 1.85c.; Marine, 1.95c. Jobbers are selling small lots from

store at 1.90c. to 2c. for Tank and 2.25c. for Flange, with the usual extras for heads, segments, lighter gauges, &c.

Sheets.—The mills in operation are overloaded with business and unable to make definite promises relative to deliveries. Large buyers are turning to jobbers and placing orders for all they can secure. Many inquiries are being received from far Eastern points. Buyers are taking what they can get and are not exacting as to particular sizes or gauges. Jobbers quote No. 27 Black Sheets at prices ranging from 3.80c. to 4c., but from present indications few Sheets will be available at the inside price at the end of this week. Galvanized Sheets are selling at 60 and 10 to 65 and stocks are running low. It is difficult to get standard sizes. Tin Plates are scarcer than ever. The local stocks of Coke Plates are practically exhausted.

Merchant Pipe.—Buyers are now becoming more interested in the danger of a strike in the mills cutting off the supply, and are ordering freely, and in all cases ask for immediate shipment. Manufacturers' prices, random lengths, are as follows:

	In carloads.	Less than carloads.
	Blk. Galvd.	Blk. Galvd.
1/2 to 1 1/2 inch and 11 to 12 inches.....	59.2	46.2 54.9 40.9
3/4 to 10 inches.....	66.7	53.3 61.9 49.9

Boiler Tubes.—The demand is strong and prices have been advanced on some sizes. Quotations on less than carload lots from jobbers' stocks are as follows:

	Steel.	Iron.
1 to 1 1/2 inches.....	35	30
1 3/4 to 2 1/2 inches.....	50	40
2 3/4 to 5 inches.....	57 1/2	47 1/2
6 inches and larger.....	52 1/2	45

Rails and Track Supplies.—More orders are being entered for Heavy Sections of Steel Rails for next year's delivery. The demand keeps up for this year, but room can only be found for small lots to be delivered at manufacturers' convenience. The Light Rails are hard to get, especially 12 to 16 pounds. The local mills are sold up on Light Rails to the last of October. Prices are quoted at \$28 for Heavy Sections, and \$29 to \$33 for Light Sections. Track Fastenings are in excellent demand. Quotations are as follows: Splice Bars, 1.65c. to 1.75c., according to quality; Spikes, 1.95c. to 2c.; Track Bolts, with Hexagon Nuts, 2.80c. to 2.90c.; with Square Nuts, 2.65c. to 2.75c.

Merchant Steel.—The condition of this year's business is shown by the report made by one of the largest companies shipping into this territory. July was with them the heaviest in tonnage and value of any previous July. The business placed during this week was of good volume, well up to the average of recent weeks. Some implement contracts were included. Railroad companies are quite freely contracting for their Steel supplies for the remainder of the year. Cold Rolled Shafting is somewhat irregular, as prices are now open. Mill shipments, Chicago, are quoted as follows: Smooth Finished Machinery Steel, 2c. to 1.10c.; Smooth Finished Tire, 1.85c. to 2c.; Open Hearth Spring Steel, 2.30c. to 2.40c.; Toe Calk, 2.40c. to 2.60c.; Sleigh Shoe, 1.85c. to 1.90c.; Cutter Shoe, 2.40c. to 2.60c.; Cold Rolled Shafting, 55 off. Ordinary grades of Crucible Tool Steel are quoted at 6 1/2c. for carloads and 7c. to 7 1/2c. from store; Specials, 12c. upward.

Old Material.—The demand for Old Material generally is rather light. Inquiry is probably best for Turnings, Borings and Bushing Scrap. Steel Scrap is very dull. High Grade Wrought Scrap also seems neglected. The molders' strike has almost completely checked business in Cast Scrap. One of the railroad companies sold a considerable quantity of accumulated material to a large concern on which the prices received were about as noted in our quotations. The following are approximate quotations per gross ton:

Old Iron Rails.....	\$19.00 to \$20.00
Old Steel Rails, mixed lengths.....	13.00 to 13.50
Old Steel Rails, long lengths.....	15.50 to 16.00
Heavy Relaying Rails.....	24.00 to 26.00
Old Car Wheels.....	16.50 to 17.00
Heavy Melting Steel Scrap.....	12.00 to 12.50
Mixed Steel.....	10.50 to 11.00

The following quotations are per net ton:

Iron Fish Plates.....	\$15.50 to \$16.00
Iron Car Axles.....	18.50 to 19.00

Steel Car Axles.....	15.50 to	16.00
No. 1 Railroad Wrought.....	14.00 to	14.50
No. 2 Railroad Wrought.....	12.50 to	12.75
Shafting	15.50 to	16.00
No. 1 Dealers' Forge.....	12.00 to	12.50
No. 1 Bushelling and Wrought Pipe.....	10.50 to	11.00
Iron Axle Turnings.....	10.50 to	11.00
Soft Steel Axle Turnings.....	9.00 to	9.50
Machine Shop Turnings.....	10.00 to	10.50
Cast Borings.....	4.50 to	4.75
Mixed Borings, &c.....	4.50 to	5.00
No. 1 Boilers, cut.....	11.50 to	12.00
No. 2 Boilers, cut.....	9.50 to	10.00
Heavy Cast Scrap.....	10.50 to	11.00
Stove Plate and Light Cast Scrap.....	8.00 to	8.50
Railroad Malleable.....	11.50 to	12.00
Agricultural Malleable.....	10.50 to	11.00

Metals.—The market is featureless. Carload lots of Lake Copper are held at 17¼c., and Casting brands 16¼c. to 16½c. Pig Lead is maintained at 4.32½c. for Desilverized, and 4.42½c. for Corroding in 50-ton lots. Dealers quote selling prices on small lots of Old Metals as follows: Copper Wire and Heavy, 15½c.; Copper Bot-toms, 14c.; Pipe Lead, 4¼c.; Zinc, 3¼c.

Coke.—Prices are easier, the demand being restricted by the labor troubles in the foundries. Quotations range from \$4.25 to \$4.75 for 72-hour Foundry Coke.

Philadelphia.

FORREST BUILDING, August 6, 1901.

The Iron and Steel markets are in a very unsettled condition, so much so in fact that it would be impossible to make anything like confident assertions in regard to present conditions, and still more so in regard to the future. Naturally a good deal of business will be held in abeyance, and prices in some lines may decline, while in others there may be an advance; all depends upon what articles may be in short supply and what may be in excess. For the present buyers keep as close in shore as possible, while sellers content themselves with such business as they can secure at about last week's prices. This, on the whole, has been surprisingly large, considering the circumstances, and so far it may be said that the local trade is just about what might be expected under normal conditions, and is apparently not affected by the strike. It is probably too much to expect that it will continue on these lines if the strike is kept up, but for the present mills and furnaces are well fixed with orders, and have no stocks of any account, so that with an ordinary run of business they should be able to maintain their position for some time to come, but what may turn up at short notice it is impossible to say. For the present, therefore, the attitude of the trade is of a strictly passive character and will so continue until the way becomes clear for definite action.

Pig Iron.—The market remains in just about the same condition as noted in our last report. Inquiries are numerous, prices unchanged and sales are very fair, considering the circumstances. The chances appear to favor the expectation of an active demand, providing that satisfactory arrangements could be made with labor, but without that it is hardly likely that any large orders will be placed. Most of the business entered during the week has been for deliveries during August and September, the later months being comparatively neglected. There is quite a scarcity of Iron at local furnaces, and deliveries on all grades are very much behind. For the present, therefore, prices remain firm at last week's figures as follows for city and nearby deliveries, and 25c. to 50c. less at points within a radius of 100 miles or so South or West: No. 1 X Foundry, \$15.50 to \$16; No. 2 X Foundry, \$15 to \$15.25; No. 2 Plain, \$14.25 to \$14.75; Standard Gray Forge, \$13.75 to \$14; Ordinary Gray Forge, \$13.50; Basic (Chilled), \$14 to \$14.25; Bessemer, \$14.75 to \$15.

Muck Bars.—Very scarce, and in the absence of offerings prices are nominally about \$28.50 bid, f.o.b. cars sellers' mills.

Billets.—Several small lots were taken last week, probably 2000 to 3000 tons in all at prices varying from \$25.50 to \$26, price according to delivery. The demand appears to be satisfied for the present, as there is no disposition to buy for forward deliveries.

Plates.—There is a good demand and mills appear to replace all their deliveries with an equal tonnage and at unchanged prices. Full time is being made at the mills

and specifications are sent in with a fair degree of promptness. Prices unchanged and for city and nearby deliveries: Plates, ¼-inch and thicker, 1.75c. to 1.80c.; Universals, 1.75c. to 1.80c.; Flange, 1.90c. to 2.10c.

Structural Material.—Mills are still pushed to make deliveries, and small premiums are bid for August shipments. There appears to be every prospect of continued activity during the remainder of the year, with an equal probability of unchanged prices which are as last quoted—viz., for seaboard or nearby deliveries: Angles, 1.75c. to 1.85c.; Beams and Channels, 15-inch and upward, 1.75c. to 1.85c.

Bars.—There is a good demand and mills have about as much business as they can handle. Prices are held at the rates adopted some time ago—viz., equivalent to 1.45c., f.o.b. Pittsburgh for Best Refined Iron, and Steel at about the same figures for carload lots and upward.

Sheets.—The continuance of the strike in the West is causing a great scarcity of Sheets, for which almost any price would be paid for prompt deliveries. Nominally quotations for Best Sheets are as follows (Common Sheets two-tenths less): No. 10, 2.60c.; No. 14, 2.80c.; No. 16, 2.90c. to 3c.; Nos. 18-20, 3.50c.; Nos. 21-24, 3.60c.; Nos. 26, 27, 3.75c.; No. 28, 3.80c. to 4c.

Old Material.—Extreme irregularity prevails in this department. In cases in which material is wanted for immediate use full prices may be obtained, while holders who are under some urgent necessity for realizing have to accept the inside figures. As a rule stocks are in strong hands, however, and not much pressure is exercised unless for material that has to be moved. Bids and offers are about as follows for deliveries in buyers' yards per ton of 2240 lbs.: Choice Railroad Scrap, \$17.50 to \$18; Country Scrap, \$16 to \$17; No. 2 Light Scrap, \$12.50 to \$13; Machinery Cast, \$13.75 to \$14.25; Heavy Steel Scrap, \$15.75 to \$16.25; Old Iron Rails, \$19 to \$20; Old Steel Rails, \$15.75 to \$16; Wrought Turnings, \$11.50 to \$12; Cast Borings, \$7.25 to \$7.50; Old Car Wheels, \$16.50 to \$17; Iron Axles, \$21.50 to \$22; Steel Axles, \$17 to \$18.

Cleveland.

CLEVELAND, OHIO, August 6, 1901.

Iron Ore.—The statistics of this year's lake movement of Iron Ore were compiled to-day, and show that the receipts at Ohio ports during the month of July were 3,697,823 tons, as against 3,058,560 tons for the month of July last year, showing, therefore, an increase of 659,263 tons. The receipts of Ore up to August 1 amounted to 8,661,431 tons, as against 9,454,400 tons for the same period in 1900, showing, therefore, a decrease of 792,969 tons. Even though a decrease is shown, the report has many encouraging features. At the beginning of July the shipment for the year was 1,452,232 tons short of the same figures for last year, and June 1 the showing was 1,576,113 short of the preceding year. July, therefore, was the banner month, not only of the year, but probably showed by heavy odds the biggest movement in any one month in the history of the lakes. The significant part of the report is that it indicates that, with the present pace being maintained, the shippers will have entirely removed the shortage from last year's figures by September 1. Nothing now appears which may mar the movement of the Ore, unless the slackening demand for material, brought about by a possible general strike, throws the boats out of business. This is not looked for, however, and every promise is for a continuation of the present speed of shipment. With the best predicted demand for material calling for only what amount was brought down the lakes last year, the shippers are very naturally counting on having an easy fall movement. At present the demand for tonnage keeps up and the rates hold firm. Just at this time the docks are congested a little, causing the boats some delays, but the shippers and owners are becoming accustomed to that and the condition is not affecting the market. Freight rates remain at 80c. from Duluth and other rates shaded proportionately.

Pig Iron.—The furnacemen have been trying diligently, especially upon the Foundry grades, to make con-

tracts covering the latter part of the year, but find that it is almost impossible to move the trade. The sales, consequently, at this time are on the hand to mouth order and are coming in with such irregularity as to be most annoying to the producers. The volume of trade, however, is enormous, for it might be said that Pig Iron is still being consumed up to the extreme limit of production of the furnaces, if not a little beyond that. In the Foundry grades deliveries are possible in a moderately short time, with prices holding firm at the old prices of \$14 on No. 1 and \$13.50 on No. 2, Valley furnace. On Bessemer deliveries are not so prompt as in the other grades, for the product for the month of August has been disposed of. No sales, however, have been made so far for delivery past September 1. Deliveries on Basic are not promising before September 1, and sales for immediate delivery are light.

Finished Material.—The market has shown a great deal of activity this week, with buying in about all grades keeping a remarkable pace. New orders for Structural Shapes are coming in heavily, so much so, in fact, that the business is all out of proportion to the usual order of things at this time of the season. Aside from the new orders, the specifications on former contracts are very heavy, and the outlook is very bright. The new business indicates an expansion in the building industry, which was hardly looked for earlier in the year, and the requirements now are beyond the capacities of the mills, making delivery on short time orders very difficult to obtain. Rails are in demand steadily, and the buying has been so extensive that it is now known to be impossible to make deliveries of all of the material sold during this year. The sales at the present time are mostly piece orders. Some sales have been of Light Rails and others of Seconds. The business, however, is very brisk, and shipments on old orders keep up to the entire limit of the capacity of the plants. While the buyers are inquiring around for Rails for next year, no sales have been made on the basis of the prices to be obtained at that time. All of the sales at this time are on the basis of \$28 for good sized orders, the smaller lots bringing \$29 and \$30. Bar deliveries are impossible in a short time now with the demand for them increasing steadily. The closing of the plants of the Steel Hoop Company has limited the supply, while the demand does not diminish. So far, however, the reduction of the product has not affected the price to any extent. Some choice orders of Steel Bars are placed at 1.45c., at Pittsburgh, but a good part of the business is being done at 1.40c. Bar Iron is bringing 1.50c. at Pittsburgh pretty generally. The price of Sheets has not changed. The only sales now being made of any consequence are out of stock, as the small producing capacity remaining active is completely engaged with contract material. Blue Annealed No. 10 out of stock are bringing 2.50c., and No. 28, one pass cold rolled, are bringing 3.95c., with other sizes graded on these quotations. The amount of stock is becoming very low.

Old Iron.—The demand for Scrap is keeping up well and some good sized sales have been made during the week. The indications are for a good stiff business, unless something more serious develops in the labor situation to prevent an increase in the consumption of the raw materials. The market, however, is holding firm on the basis of former prices. This week has seen no variation in values. The quotations are: No. 1 Wrought, \$15, net; Heavy Steel, \$15, gross; Steel Rails, \$15, gross; Cast Borings, \$6, net; Wrought Turnings, \$10, net.

Cincinnati.

FIFTH AND MAIN STS., August 7, 1901.—(By Telegraph.)

The market for Pig Iron has shown but little life throughout the week. It is generally believed that the impending Steel strike is having a depressing effect, buyers are fighting shy, and in some cases are withdrawing inquiries for fair sized lots. There have been some fair sized sales of Foundry Iron, but what the tonnage has gained in this direction it has more than lost in the decrease in number of smaller transactions, as an effect to this weakening in influence Southern furnaces

are understood to have entered into an agreement as to prices to hold good until further notice. This agreement is upon the basis of the following figures, Birmingham: No. 2, \$10.50; No. 3, \$10; Gray Forge, \$9.50. In spite of this the feeling is a little pessimistic, and doubts are being freely expressed as to the duration of the agreement. The situation is an uncertain one, and accurate quotations hard to arrive at. We give the market the benefit of doubt, and quote the agreement figures. Freight rate from Birmingham is \$2.75 to this point; from Hanging Rock district, \$1. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.....	\$13.50 to \$13.75
Southern Coke, No. 2.....	13.00 to 13.25
Southern Coke, No. 3.....	12.50 to 12.75
Southern Coke, No. 4.....	12.00 to 12.25
Southern Coke, No. 1 Soft.....	13.50 to 13.75
Southern Coke, No. 2 Soft.....	13.00 to 13.25
Southern Coke, Gray Forge.....	12.00 to 12.25
Southern Coke, Mottled.....	12.00 to 12.25
Ohio Silvery, No. 1.....	15.50 to 16.00
Ohio Silvery, No. 2.....	14.50 to 15.00
Lake Superior Coke, No. 1.....	14.50 to 15.00
Lake Superior Coke, No. 2.....	14.00 to 14.50
Lake Superior Coke, No. 3.....	13.50 to 14.00
Southern Basic.....	13.75 to 14.00

Car Wheel and Malleable Irons.

Standard Southern Car Wheel, chilling grades.....	\$18.25 to \$18.75
Standard Southern Car Wheel, No. 2.....	17.25 to 17.75
Lake Superior Car Wheel and Malleable.....	18.50 to 19.00

Birmingham.

BIRMINGHAM, ALA., August 5, 1901.

Reports concerning the market vary. Some are disposed to take a roseate view of the situation, while there are others who say the situation is unchanged. The latter view seems to be more in accord with the actual condition of the market. Some parties claim that the inquiry is broadening and that transactions are increasing. This may hold good in individual cases, but, as a rule, all that can be said of the market is that it is holding its own. Some holders are of the opinion that the strike will increase orders here while there are others who cannot see how any benefit is to accrue from it. The best that can be said is that prices are more uniform, and the market is steadier. No. 2 Foundry sold, as a rule, at \$10.50, and No. 3 Foundry at \$10; No. 4 Foundry sold at \$9.50, and Gray Forge at \$9.25. Some Basic Iron was sold at \$11, but only in moderate lots. There were no sales of important lots of any grade. Shipments are pretty free, and maturing contracts are being tendered and received. One very encouraging feature of the trade is the revival of the export trade. Inquiries have increased of late, and freight agents have been active in promoting business. Plenty of room has been offered and at less rates than prevailed a year ago. Negotiations have been actively progressing, but nothing was successfully concluded until Saturday, when your correspondent has reason to believe that a trade for 2000 tons was worked. This is the first export order of any moment that has been secured for several months, and may mark the beginning of a revival in that trade. The outgoing vessels carrying cotton will want iron for ballast, and so far their engagements are practically nil. So for a while we may look for inducing freight rates and an outlet as compensation for any injury that we may suffer from the strike.

Probably two of the furnaces out of blast will be blown in by the time this is printed, but we are apt to have others take their places. The formal combination of the furnace interests of East Alabama has not yet been announced. It is hard to get at the real facts of these consolidations until they are formally announced, but it is current rumor that the combine takes in the furnaces at Gadsden, Ironton, Jenifer, Anniston, Talladega and Shelby. Who are to be the officers has not yet leaked out.

The formal announcement of the consolidation of the Tutwiler and Adler interests has been made, under the name of the Tutwiler Coal & Iron Company. They are capitalized at \$1,500,000, and will mine Iron and Coal, operate furnaces, make Coke, &c. Those interested are men of experience, capital, enterprise and business shrewdness.

A scheme in which New Orleans parties are inter-

ested has developed of late, which looks to the utilization of the Warrior River to land Coal in Mobile and New Orleans by barge line, insuring the lowest rate of transportation. As it is, those corporations favorably situated are well filled with orders for some time to come. In Coke the situation has been strained at times, but is gradually being relieved.

There has been something of a strike here on the part of labor, but so far it has had no serious effect and will probably "peter out."

As has been frequently stated in these letters those of our industries managed with prudence have been compelled to enlarge their capacity to care for offered business. Attention has been directed of late to real estate in the business part of the city and several transfers of importance have been made. The electric car line has adopted plans to extend its lines in Bessemer, and other points and to give quicker service. The question of labor sufficient to supply the demands of corporations and contractors is becoming a serious one. The inroads made upon it by outsiders will be met hereafter with aggressiveness.

A new railroad from Vicksburg is heading this way and asking co-operation of the district. All in all, something new is constantly coming up to feed the thought that we are just beginning to grow.

Pittsburgh.

HAMILTON BUILDING, August 7, 1901.—(By Telegraph.)

Pig Iron.—The Bessemer Iron market is neglected and there has been nothing doing since our last report. There is to be a meeting of some of the blast furnace workers in the Mahoning and Shenango valleys, to be held on Wednesday night, to decide whether the men will go out on a sympathetic strike. It is not believed the men at more than one or two furnaces will strike, and probably not any. Forge Iron is strong and there is a pretty good demand for it. Foundry Iron is dull and prices are weak and lower. We quote: Bessemer Pig, nominally, \$15.25, at furnace, or \$16, Pittsburgh; No. 1 Foundry, \$14.50 to \$14.75; No. 2, \$14 to \$14.25; No. 3, \$13.50 to \$13.75, all f.o.b. cars Pittsburgh. We note a sale of 200 tons of Standard Gray Forge Iron at \$14, Pittsburgh.

Steel.—The probable spread of the strike to some of the mills of the National Steel Company has removed any weakness in prices of Billets, and the Steel market is very firm and higher. They quote Billets and Slabs for prompt shipment at \$24.50 to \$24.75, at maker's mill. We note a sale of Slabs for prompt shipment at a price equal to \$24.50, maker's mill.

Skelp.—The market is very strong and Grooved Iron Skelp is firm at about 1.90c., maker's mill.

Hoops.—The American Steel Hoop Company are turning out more than 50 per cent. of their capacity on Steel Hoops. The Lorain mill is now running on Hoops and also several mills at Cleveland.

Sheets.—The American Sheet Steel Company are turning out about 75 per cent. of their total capacity in Sheets. One or two more mills will be started in a few days.

(By Mail.)

The condition of the strike in the Sheet, Hoop and Bar mills is fully set forth elsewhere in this issue. The strike is causing a decided scarcity in some lines of material, notably Sheets, Skelp, Hoops, Cotton Ties and Tin Plate. The latter has sold at \$5 to \$5.25 a box, \$1 a ton above the American Tin Plate Company price to jobbers. No. 28 Sheets have sold at 4c. for prompt delivery and will probably be much higher if the strike lasts. The shut down of so many mills has caused a large influx of orders to other concerns, and Jones & Laughlins, Carnegie Steel Company, National Steel Company, Cambria Steel Company and other concerns are operating all their mills to full capacity and are filled up for the next two or three months. The concern who are probably profiting most by the shut down of the mills are the Republic Iron & Steel Company. This company had no trouble with the Amalgamated Asso-

ciation over the scales and are running all their mills to full capacity, and have recently started several plants that have been idle for a long time. They are obtaining high prices for their products and ought to be making a great deal of money. Opinion differs as to the probable duration of the strike. The decisive victory won by the United States Steel Corporation at the Wellsville and Hyde Park Sheet mills leads many to believe that the power of the Amalgamated has been greatly overrated and that the strike will not last long. Others, and they are in the minority, believe that the fight will be long drawn out. The week in Pig Iron and Steel has been quiet. The United States Steel Corporation have pretty fully covered their requirements in Bessemer and Basic Pig Iron for August, and are not paying any attention to the Iron market, which will likely continue quiet for balance of this month. The Steel market is weaker, and Billets for balance of the year delivery have been offered below \$23, maker's mill. Tonnage in Finished Material is large and, it is almost needless to say, the market is very strong. Sheets, Skelp, Tubing and Tin Plate can command almost any price for prompt delivery.

Ferromanganese.—The market on Ferromanganese is somewhat demoralized, and foreign 80 per cent. Ferro has been offered at about \$53, f.o.b. cars Pittsburgh, in round lots. Small lots of domestic Ferro are held at \$55, delivered at buyer's mill.

Sheets.—Up to 4c. or higher has been paid for No. 28 Black Sheets, for prompt delivery. Jobbers who have Sheets in stock can get almost any price they ask. There is some talk of foreign Sheets coming into this market, as they can be laid down here and sold at a profit at to-day's prices. The independent Sheet mills are running right along and making a mint of money. The American Sheet Steel Company are steadily increasing their output of Sheets and have Wellsville and Hyde Park running full, nonunion. It is almost impossible to quote the market, but we may state that No. 27 Black Sheets, for anything like prompt shipment, are 3.50c. to 3.75c., and No. 28, 3.75c. to 4c. Contract for Sheets without specified delivery could, of course, be placed at less than the above prices. Galvanized Sheets can hardly be had at any price. We quote at 70 and 5 off in carloads and 70 off in small lots.

Plates.—There is a good demand for both Universal and Sheared Plates and the leading mills are full of work. Some of the smaller Plate mills, however, are not so busy and can make prompt delivery. The tone of the market is strong, and any cutting is being done by small mills not governed by the Plate agreement. The schedule of delivered prices fixed by the Plate Mills Association is, we are advised, being firmly held. We quote: Tank quality, 1/4-inch and heavier, 1.60c.; 3-16-inch, 1.70c.; under 3-16-inch and above No. 10, 1.75c.; Flange or Boiler Steel, 0.1c. advance over the base of Tank; Marine and Fire Box, American Boiler Manufacturers' Association specifications, 0.2c. advance over Tank; Still Bottom Steel, 0.3c. advance over Tank; Locomotive Fire Box Steel and equivalent specifications, 0.5c. advance over Tank, all f.o.b. Pittsburgh.

Steel Rails.—Some inquiries are in the market for Rails for next year's delivery, but so far nothing large has been done. A few small lots have been placed for prompt shipment. We quote Standard Sections at \$28 at mill and Light Rails from \$30 to \$33.

Bars.—There is a heavy demand for both Steel and Iron Bars, particularly the latter, and the mills are full of work. The Republic Iron & Steel Company have everything running that can be operated. Specifications on old contracts are coming in freely, and there is difficulty in placing orders for either Iron or Steel Bars for prompt shipment. We quote Steel Bars at 1.40c. to 1.45c., half extras, at mill. On Open Hearth Steel Bars \$2 a ton advance is charged, and also extras for high carbons. There is a good demand for Common Iron Bars and we quote 1.40c. to 1.45c., half extras, Valley mill, and 1.50c. for Refined Iron. We quote Hoops at 1.85c. for large orders and up to 2c. for small lots. We quote Bands up to No. 12 gauge at 1.40c. to 1.45c., half extras, at mill.

Structural Material.—There has been a fair run of small orders placed, a good deal of it for Eastern de-

livery. The bridge companies are very busy and placing orders right along. The Structural mills are all filled up for the next two or three months. We quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6 inches, 1.60c.; smaller sizes, 1.55c. to 1.60c.; Zees, 1.60c.; Tees, 1.65c.; Steel Bars, 1.40c. to 1.45c., half extras, at mill; Universal and Sheared Plates, 1.60c. All above prices are f.o.b. Pittsburgh.

Merchant Steel.—There is a fair tonnage being placed and the tone of the market is stronger, probably due to the strike. We quote: Tire Steel, 1.60c. to 1.70c.; Toe Calk, 1.85c. to 2c.; Open Hearth Spring, 2c. to 2.10c.; Plow Slabs, 2c. to 2.10c.; Cold Rolled Shafting, 55 per cent. off in carloads, 50 per cent. in less than carloads; Sleigh Shoe Steel, 1.65c. to 1.75c.; Tool Steel, 7c. per lb. and upward, according to quality. On Tool Steel the mills allow freight east of the Mississippi River. A few mills quote Tool Steel as low as 6c., but do not allow freight.

Skelp.—The shut down of so many mills rolling Skelp, together with the heavy demand for it, has caused a sharp advance in prices. Sheared Iron Skelp, wide sizes, has sold in round lots at 2c. a lb. Some of the small Pipe mills that buy their Skelp in the open market may have to shut down on account of inability to get Skelp. We quote Grooved Iron Skelp at 1.85c. to 1.90c. and Sheared at 1.90c. to 2c., depending on size. We may note sales of 3000 to 4000 tons of Sheared Iron Skelp, wide sizes, at 2c., maker's mill. We quote Grooved Steel Skelp at 1.75c. to 1.80c. and Sheared at 1.80c. to 1.85c., maker's mill.

Tubing.—All the Tube mills are full of work and there is a very heavy demand. On certain sizes of Pipe stiff premiums continue to be paid for prompt delivery. Some of the independent Pipe mills are in distress for Skelp and may have to shut down. Prices to consumers in small lots are as follows:

Merchant Pipe.		
	Per cent. Black.	Per cent. Galvd.
1/4 to 1/2 inch and 11 to 12 inch.....	61	48
3/4 to 10 inch.....	68 1/2	56
Casing, Random Lengths.		
	S. & S.	I. J.
2 to 3 inch.....	58	53 1/2
3 1/4 to 4 inch.....	63	59
4 1/4 to 12 1/2 inch.....	65	61 1/2
Casing, Cut Lengths.		
	S. & S.	I. J.
2 to 3 inch.....	53 1/2	59
3 1/4 to 4 inch.....	59	55
4 1/4 to 12 1/2 inch.....	61 1/2	57 1/2
Boiler Tubes.		
	Up to 22 feet. Per cent.	
Steel.		
1 inch to 1 1/4 inch and 2 1/2 inch to 5 inch, inclusive....	65 1/2	
2 inch to 2 1/2 inch, inclusive.....	60	
6 inch and larger.....	59	
Iron.		
1 inch to 1 1/4 inch and 2 1/2 inch.....	43 1/2	
1 1/4 inch to 2 1/4 inch.....	43	
2 1/4 inch to 13 inch.....	53	

Prices made by the mills to the jobbers are from 5 to 10 per cent. or more lower than the above, depending on the order. It should be noted that the above prices are for small lots.

Coke.—Output of Coke in the Connellsville region last week was 238,131 tons, a gain over the previous week of about 1500 tons. Shipments were 11,078 tons. Some very low prices are being made on outside Coke in the Eastern market. Some brands of Furnace Coke for Eastern shipment have sold as low as \$1.30 a ton at oven. Outside Foundry Coke is quoted at \$1.75 to \$2 a ton, while strictly Connellsville Foundry Coke is held at \$2.25 to \$2.35 a ton. Connellsville Furnace Coke is held at \$1.75 to \$2 a ton.

German Iron Market.

ESSEN, July 22, 1901.

The general tone of the market has shown a good deal of quieting down after the moderate improvement recorded in the previous month. It is quite impossible to judge when a real bettering of conditions may be expected. One principal cause of trouble is that finishing works still have large contracts for raw material at very high prices to work off, these prices not corresponding in the least to current prices for finished products. Since it is a question of hundreds of thousands of tons of old contracts for raw material it is quite evident that it will

take months before the end is reached. In the meantime the finishing mills must be working at ruinous prices. For instance, those who have contracted for Billets and Bars at 135 marks per ton and are supposed to manufacture from the same Steel Bars, fetching now 110 marks, or Sheets which are offered at 125 marks, can certainly not be making money.

No new business has been done in Ore, since the majority of the old contracts do not expire before the end of this year, and no one is willing at the present time to cover for 1902. New prices have not yet been made for Pig Iron by the syndicate. Shipments are moderate, but stocks at the large works are, generally speaking, very heavy. During the last few days negotiations have been carried on between the syndicate and consumers, looking to the lowering of prices on all old contracts.

The Pig Iron syndicate is willing to meet the mills, but it is not prepared to lower prices unless the rolling mills agree to certain conditions. It is understood that this refers to an agreement to purchase exclusively from the Pig Iron syndicate for a specified time, and that other conditions are also named. The mills show very little disposition to make such an arrangement, because a sudden change in conditions might make such obligations very onerous. Probably, therefore, for the present, high prices will continue to rule for old contracts of Pig Iron. New sales for future delivery are made only in very small quantities at considerably lower prices. For later delivery no business whatever is being done, because the negotiations for the extension of the syndicate while they have made progress have not been finally concluded. It is possible that a decision will be reached at the meeting to be held during this month.

The offerings of Old Material continue to exceed the demand. Prices are very much depressed, Heavy Cast Scrap being quoted 54 and 55 marks; Open Hearth Scrap, 47 to 48 marks; No. 1 Wrought Scrap, 51 to 52 marks; Old Iron Rails, 65 to 66 marks per ton, delivered at mill.

Steel business is very light, and all the mills are running slowly, but it is expected that at no distant date the Wire Rod mills will cover their requirements for Billets. Prices at the present time are 85 marks for Ingots, 90 marks for Blooms, 95 marks for Billets, Ordinary Basic Material, with extras for other grades.

The Plate market has shown a slight increase in the demand lately, and the works are supplied with specifications for a few weeks to come. The deliveries for the shipbuilders are quite active. Boiler Plates for stationary boilers are not selling freely, but for marine boilers heavy orders are being placed. Common Plates are selling quite well, some new contracts having been placed at syndicate prices. Export business is quite active, and a number of larger orders have been secured, although at a sacrifice. Inquiries and specifications are received promptly, so that the export trade furnishes an important part of the work now on hand. For the home market prices are about 140 marks for Ordinary Tank Plates, 180 marks for Boiler Plate. Prices for export are very much lower owing to active competition. In the shipbuilding trade the competition of England must be taken into consideration.

The market in Sheets is not unfavorable. Inquiry has improved, and fair orders are coming in. Prices rulling for some time past, though unremunerative, have been maintained. All the works are well employed and good orders are coming in for export. Even the United States is in the market for one large block. Prices for Sheets are 125 marks per ton.

Deliveries of Beams are fairly active, and the works have succeeded in decreasing their large stocks. Still new orders are coming in only slowly. Bars and Hoops are not being required for the home market, and only those works are well supplied which have taken export orders at any price. Steel Bars are quoted 110 to 115 marks and Iron Bars 122.50 to 130 marks, according to quality. The official price on Bands is 125 to 127.50 marks, but it can only be put through in rare cases.

The market for Wire Rods is not as active as it was a few weeks since. The output for the third quarter is only partially sold. Meanwhile it is doing better, particularly so far as the export trade is concerned, in which there have been some good orders. It is true that prices

are low, since even the German works are sharply competing with one another in the export market. Ordinary Steel Wire Rods for the home market are quoted 135 marks; Plain Steel Wire, 147.50 to 150 marks; Iron Wire Rods, 147 to 150 marks.

The Wire Nail syndicate has been extended for three years, but some of the works in Southern Germany have not joined. A number of good orders have been received, the best price being 200 to 205 marks per ton. On Heavy Rails large orders have been taken for export and others are now pending. Prices, however, are very low for Light Rails, Street Rails, Mine Rails, &c., the demand has fallen off, and the works in this branch are occasionally in trouble about employment. Mine Rails and Light Rails are quoted 100 to 105 marks. Girder Rails, street railroads, 140 to 145 marks.

Locomotive shops have a good deal of work for a considerable time to come. The last letting of the Prussian State railroads for 300 locomotives was only 2 per cent, lower than that of the previous order. There is little work in sight for the car builders, because the larger orders of the Prussian Railroad which were expected, have been postponed indefinitely. The foundries and machine shops are very unevenly employed. Some of them have work for months to come, while others have nothing to do. The result is very sharp competition.

New York.

NEW YORK, August 7, 1901.

Pig Iron.—Very little has been done in this market, and the situation continues puzzling. Buyers are operating only from hand to mouth. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, \$16 to \$17.50; No. 2 X, \$14.75 to \$15.75; No. 2 Plain, \$14 to \$14.50; Gray Forge, \$14 to \$14.50; Tennessee and Alabama brands, No. 1 Foundry, \$14.50 to \$15; No. 2 Foundry, \$14 to \$14.50; No. 1 Soft, \$14.50 to \$15; No. 2 Soft, \$14 to \$14.50; No. 3 Foundry, \$13.25 to \$13.50; No. 4 Foundry, \$12.75 to \$13.25; Gray Forge, \$12.75 to \$13.

Cast Iron Pipe.—The shops are very busy. The only inquiry of importance in the market now is for a lot of 4000 tons for this city. We quote \$25 to \$25.50 per gross ton at tidewater.

Steel Rails.—We note a sale of 15,000 tons of Steel Rails at full prices and a lot of 6000 tons of Bessemer at private terms to a dealer. We quote \$28 for Standard Sections, \$33 to \$33.50 for Girder Rails, and \$22 to \$23 for Relays. We quote Spikes, 1.80c. to 1.85c.; Splice Bars, 1.50c. to 1.60c.; Hexagon Track Bolts, 2.65c. to 2.70c., at mill.

Finished Iron and Steel.—Agents report a good run of business in Structural Steel. We quote as follows at tidewater: Beams, Channels and Zees, 1.75c. to 1.80c.; Angles, 1.75c. to 1.80c.; Tees, 1.80c. to 1.85c.; Bulb Angles and Deck Beams, 2c.; Sheared Steel Plates are 1.80c. to 1.85c. for Tank, 1.90c. to 1.95c. for Flange, 2c. to 2.05c. for Fire Box. Charcoal Iron Plates are held at 2.25c. for C. H. No. 1, 2.75c. for Flange, and 3.25c. for Fire Box. Refined Bars are 1.58c. to 1.60c.; Soft Steel Bars, 1.62½c. to 1.65c.

Metal Market.

NEW YORK, August, 7, 1901.

Pig Tin.—Business has been very quiet throughout all of the week under review. Spot, which is now fully controlled, commanded 27½c. to 27¾c. in a small jobbing way, but futures were at all times weak, and are quoted to-day as follows: August, 26c., sellers; September, 25½c., sellers; October, 25c., sellers; November, 24¾c., sellers. The London market was weak and declining, reaching the lowest to-day, at £115 15s. for spot and £111 15s. for futures. The monthly statistics published on August 1 were unfavorable. The total visible supply increased 2295 tons. Deliveries here were good, but in Europe extremely small. The Banca sale in Holland on July 31 went low, the price being at an equivalent of 26.35c., c.i.f. New York. The market in Holland has, however, since declined, and offers to sell at 26c. are

now being freely made. To-day's Billeton sale at Batavia went at an equivalent of £110, c.i.f. Holland.

Copper.—Business in this market is practically at a standstill. There is nothing doing, and prices are nominally 16½c. to 17c. for Lake, and 16¾c. to 16½c. for Electrolytic and Casting. The London market declines daily, closing to-day at £66 6s. 3d. for spot, and £66 15s. for futures, which is the lowest quotation named this year. Best Selected declined £1, being quoted to-day at £73. The export for the month of July reached a total of only 7563 tons. The total exports since January 1 are now 39,295 tons less than the figures for the corresponding period of last year. Since August 1 the exports have amounted to only 250 tons, while the imports during the same month were about 650 tons. During the last ten days about 2000 tons of Chili Bars arrived here from Europe.

Pig Lead.—Business is dull and unchanged, the American Smelting & Refining Company quoting 4.37½c. for Desilverized, New York, and 4.32½c. f.o.b. St. Louis. London has advanced a shade, being quoted to-day £11 17s. 6d.

Spelter.—Is dull, both here and abroad. Prices here are unchanged at 3.90c. to 3.95c., and in St. Louis the nominal quotation is 3.80c. London has declined 2 shillings and 6 pence to £16 10s.

Antimony.—Is firm at unchanged prices. Hallett's being quoted 8¾c. and Cookson's 10¼c.

Nickel.—Is firm and unchanged on a basis of 60c. for lots not covered by yearly contract.

Quicksilver.—Prices are unchanged from last week, being \$51 per flask of 76½ lbs. in lots of 50 flasks and more. London is unchanged at £9.

Tin Plate.—The rush for deliveries has been resumed owing to the unfavorable news regarding the steel strike. Brokers who are fortunate enough to have regular sizes in stock are commanding high prices and consumers who are anxious to cover their requirements are glad to pay the prices asked. We have heard of instances where a premium of \$1.50 per box over consolidation prices has been paid. In England prices have advanced to 15 shillings 3 pence, which is 6 pence higher than the price quoted last week. To-day a steamer arrived from Swansea with about 27,000 boxes aboard.

The Molders' Strike.

(By Telegraph.)

CHICAGO, ILL., August 7, 1901.—The National Founders' Association has begun this week to make an aggressive fight against the striking molders in this city. This action has been taken with the approval of the national officers of the Iron Molders' Union. President Hoyt of the Founders' Association firmly maintains the position that the Molders' Union must live up to their agreement, and President Fox of the union has used every effort to have the agreement respected. The Chicago molders, however, are defying their national officers, and, strengthened in their position by the surrender of a few weak kneed firms, are now uncontrollable. Secretary Penton of the Founders' Association is actively engaged in managing the contest now being conducted. The association is advertising in the city papers for floor molders, to whom they will pay \$4.75 a day, and bench molders, \$4.50 a day, and are making some progress in securing men. It is anticipated that the association will have a great many men in the shops by next week, as they are able to engage union or nonunion men under the peculiar circumstances. Something will depend, however, on the attitude of the city police. This morning mobs drove the molders from three foundries in which the men had gone back to work for their old employers.

The Chicago employers have now withdrawn the compromise offer made to their men, and will only pay the old wages in force before the strike should their men decide to return.

The machine shops whose men are still on strike are gradually securing additions to their working force, and although the progress is slow, it is daily becoming more encouraging.

QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING AUGUST 7, 1901

Cap'l Issued.		Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday.	Closing	Sales.
\$10,000,000	Am. Bicycle Co., Com.....			- 4				...	100
20,000,000	Am. Bicycle Co., Pref.....	-20			-20			...	400
10,000,000	Am. Bicycle Co., Bonds.....							...	
29,000,000	Am. Car & Foundry, Com..	29 -20%	29 1/4-20%	-29 1/2	28 -20	28 -28 1/4	27 3/4-28 3/4	28 1/2	6,950
29,000,000	Am. Car & Fndry, Pref. §..	83 3/4-84			80 -83 1/2	-83	81 1/4-82	82	1,700
7,500,000	Bethlehem Iron.....						-61 1/2	...	
15,000,000	Bethlehem Steel.....		-22%		-23	-23		...	1,700
7,974,550	Cambria Iron, Phila.*.....	48 1/2-49						...	200
16,000,000	Cambria Steel**.....	22 3/4-23	22 3/4-22 3/4	22 3/4-23	-23	22 -22 1/2	21 1/4-22	22	7,300
17,000,000	Colorado Fuel & Iron.....	95 1/4-96 1/2	95 1/2-97	-95 1/2	93 1/2-95	92 1/2-93	90 -92	92	2,200
24,410,900	Crucible Steel, Com.....							...	
24,399,500	Crucible Steel, Pref.....							...	
1,975,000	Diamond State Steel§§§...-	3					- 3	...	200
15,000,000	International Pump, Com..							...	
8,850,000	International Pump, Pref..						-83	83	100
11,000,000	International Silver.....				- 6 1/4			...	100
10,750,000	Penna., new, Com., Phila..							...	300
16,500,000	Penna., new, Pref., Phila. §	-87	-87		-85 1/4			...	1,500
12,500,000	Pressed Steel, Com.....	42 -43 3/4	42 1/2-43		42 -42 1/2	41 1/2-42 1/4	41 1/4-42 1/2	42 1/2	1,900
12,500,000	Pressed Steel, Pref.....	83 3/4-84 1/4			-82 1/4	-84 1/2	83 -84 1/2	84 1/2	600
27,191,000	Repub. Iron & Steel, Com..	19 1/4-20 1/4	19 1/2-20	19 1/2-20	18 1/2-19	-19	18 3/4-19 1/2	19 1/2	3,400
20,306,900	Repub. Iron & Steel, Pref..	74 -75	-74		72 1/2-74		73 -73 3/4	73 3/4	1,800
7,500,000	Sloss-Sheffield S. & I., Com.		-33		32 -33		-31 1/2	31 1/2	600
6,700,000	Sloss-Sheffield S. & I., Pref. §							...	
20,000,000	Tennessee Coal & Iron.....	62 -63 1/2	61 -62		58 1/2-61	58 -60	58 1/4-58 1/2	58 1/2	7,100
1,500,000	Tidewater Steel.....	- 6 1/4						...	150
506,473,400	U. S. Steel Co., Com. §§....	42 1/4-44 1/4	41 1/4-43 3/4	43 1/2-44 1/2	40 -41	39 3/4-40 3/4	39 3/4-40 3/4	40 3/4	452,735
508,486,300	U. S. Steel Co., Pref. §§....	91 1/4-93 1/4	91 1/2-92 3/4	92 3/4-93 1/2	89 3/4-90 3/4	89 1/4-89 3/4	89 -90	90	207,100
1,500,000	Warwick I. & S. §.....	- 7 1/2						...	200

Cambria Receipts, 18,200.

Preferred stocks 7% cumulative unless otherwise stated. § 7% Non-Cu. §§ New stock. | Par \$10. † Par \$50. §1 paid in. || Authorized Capital \$350,000,000 (common); \$555,000,000 Preferred; * Par \$50. ** \$10.50 per share paid in. † † † guaranteed by Beth. Steel Co. Late Philadelphia sales by telegraph. † Ex-dividend.

Bonded Indebtedness: American Bicycle Co., \$10,000,000 sinking fund gold debentures 5%; Cambria Iron Co., \$2,000,000 6% debenture 20-year bonds, 1917, payable option 5 years, assumed by Cambria Steel Co.; Diamond State Steel Co., property leased from Diamond State Steel Co. at 4% on \$1,000,000, \$6.25 on Steel stock paid in, \$1.25 called for June 1st, total capital \$3,000,000; International Pump; Blake & Knowles S. P. Co. \$1,000,000 6%; Tennessee C. I. & R. R. Co., \$8,867,000 6%; \$1,114,000 7%; \$1,000,000 7% cu. pref.; Pennsylvania Steel, \$1,000,000 5% Steelton 1st, 1917, \$2,000,000 5% Sparrow's Point 1st, 1922, \$4,000,000 consolidated, both plants; Bethlehem Iron, \$1,351,000 5% maturing 1907, interest and principal guaranteed by Bethlehem Steel Co.; Republic Iron & Steel, none; Warwick Iron & Steel, none; Colorado Fuel & Iron Co., Col. Fuel Co. Gen. Mort. 6% \$880,000, Col. Coal & Iron Co. Mort. 6% \$2,644,000, Col. Fuel & Iron Gen. Mort. 5% \$2,674,000, also outstanding \$2,000,000 preferred stock; Sloss-Sheffield St. & I. Co., Sloss I. & S. first mortgage 6%, \$9,000,000, Sloss I. & S. general mortgage 4 1/4% \$2,000,000. U. S. Steel Corporation \$204,000,000 5% gold bonds, also Am. S. & W. Co. \$180,666 Federal Steel Co. \$9,832,000 Illinois 5%, \$7,417,000 E. J. & E. R. R. 5%, \$1,000,000 Johnson 6%, \$6,782,000 D. & I. R. R. 5% \$1,000,000 2d D. & I. R. R. 6%, \$10,000 land grant D. & I. R. R. 5%; National Steel \$2,561,000 6%

Iron and Industrial Stocks.

Again the United States Steel stocks have absorbed practically all the attention. The changing phases of the rolling mill strike have affected these issues somewhat, Monday particularly reflecting the surprise of the failure of negotiations. The stock now appears to be "pegged" at 40 for the common and 90 for the preferred.

	Bid.	Asked.
E. W. Bliss, common.....	145	152
E. W. Bliss, preferred.....	130	140
Cramp's Shipyard Stock.....	79	82
Empire I. & S., common.....	4	5
Empire I. & S., preferred.....	30	35
National Enam. & St., common.....	22	25
National Enam. & St., preferred.....	83	87
New Haven.....	4 3/4	5
Otis Elevator, common.....	33	36
Otis Elevator, preferred.....	97	98
Pratt & Whitney, preferred.....	85	90
U. S. Cast Iron Pipe Company, common.....	6	7
U. S. Cast Iron Pipe Company, preferred.....	34	35
U. S. Projectile.....	119	...
Va. C. I. & C., Stock.....	7	9
Va. C. I. & C., Bonds.....	37	40
H. R. Worthington, preferred.....	111	113
American Can Company, common.....	22 1/2	22 1/2
American Can Company, preferred.....	72	73

A meeting of the stockholders of the National Enameling & Stamping Company will be held on August 12 to act upon a proposition looking toward the issuance of new bonds to the extent of \$2,500,000. The directors of the company have, subject to the assent of the stockholders, entered into an agreement with the St. Louis Trust Company to sell, and the latter interest has agreed to buy, an issue of \$2,500,000 of 5 per cent. bonds, secured by mortgage upon the property and undertaking of the company. An official circular to the stockholders just issued states that on July 1, 1901, the total mortgage and floating debt amounted approximately to \$2,650,000, of which \$525,000 is represented by mortgages which were upon two smaller plants at the time they were acquired, and the balance of \$2,125,000 represents bills payable. The proceeds from the sale of bonds, together with balance on hand, will satisfy all the obligations and leave a surplus. The company have liquid assets consisting of cash, merchandise, bills and accounts receivable to the amount of \$5,200,000.

Dividends.—The American Radiator Company have declared the regular quarterly dividend of 1 1/4 per cent. on their preferred stock, payable August 15.

The Niles-Bement-Pond Company have declared a quarterly dividend of 1 1/2 per cent. on their preferred stock, payable Aug. 15, and a semi-annual dividend of 3 per cent. on their common stock, payable in two installments of 1 1/2 per cent. each on September 5 and December 5.

United States Consul Ruffin reports from Asuncion that the importers and exporters of that city have formed a company to control the exports of Paraguay. The company will make advances to producers, receive products in consignment for export on commission, and transact such business as may in the opinion of the board further the interest of the company. In view of the generally prosperous conditions and the fact that no failures have taken place for the last few years business men in the country seem disposed to invest capital, and there is every hope, says the Consul, that Paraguay will take advantage of her improving credit in foreign markets and extend her commercial relations.

St. Petersburg has been planning to celebrate the two hundredth anniversary of the foundation of the city by an exposition in 1903. Minister De Witte, however, has decided that the time is too short for such an important undertaking as that planned and it will be deferred until 1913, which will be 200 years after the Russian capital was removed to St. Petersburg.

The Hamburg-American Line is reported to have signed a contract with Harland & Wolff of Belfast, Ireland, for the construction of a 21,000-ton steamer. Although larger than the "Deutschland," the new liner will not be built for speed, and, therefore, is not calculated to compete in that respect with the transatlantic champion.

The New York Machinery Market.

NEW YORK, August 7, 1901.

There has been no change in market conditions here during the last week. Business has continued on a slow, quiet scale and the market might again be summarized as dull. No large transactions were reported, but the events of the week forecasted considerable additional business. It is not expected in the trade that many of the new projects that have come to the front during the last few days will materialize before the fall months. Inquiry regarding certain of the largest undertakings elicited the reply that purchases would not be made until after the summer months. Probably the most interesting event in the machine tool trade was the progress made in the direction of obtaining the equipment for the new shops which the Central Railroad of New Jersey are building at Elizabethport, N. J. Manning, Maxwell & Moore are now placing orders with various machine tool builders for a portion of this equipment. As previously stated in this column, Manning, Maxwell & Moore are acting as purchasing agents for all of the machinery required.

A fair sized lot of tools has been purchased by the Imperial Engineering Company, who have been shopping about for an equipment for an additional department to their works at Painted Post, New York. It is said that this concern intend embarking in the pneumatic tool business.

Orders have been placed by the Strong & Trowbridge Company, exporters, of 24 State street, for a machinery equipment for machine shops to be erected by one of the Indian Railways at Calcutta, India. The largest individual order was placed with the Binsse Machine Tool Company of Harrison, N. J. It was for five-foot boring mills.

It was expected in the trade that the orders for the engine and boiler equipments required at the proposed power station of the New York Rapid Transit Subway Construction Company would be placed this week. The orders have not been given out as yet, and Engineer Van Vleck informs us that two weeks will probably be required before the transactions will be closed.

We are officially advised that the Ingersoll-Sergeant Drill Company intend removing their plant from Easton. The new location has not been definitely decided upon as yet. Several sites are under consideration. Those most favorably received are at Elizabeth, Newark and Trenton, N. J. One at Bethlehem, Pa., is also under consideration. Lack of room occasions the removal. The company have arrived at a stage where their present facilities are inadequate, and the present site does not permit of further expansion. It is intended to build new works which in all departments will be considerably larger than the Easton plant.

Plans are being prepared by the George M. Newhall Engineering Company, Limited, of 43 Cedar street, for a large sugar refinery to be built at Shadyside, N. J. While the project is still in rather an embryotic state, it is generally admitted that strong financial interests are behind the scheme and will push the matter through. The new concern, it is said, will be known as the Knickerbocker Sugar Refining Company. The New York sugar importing house of Robert Croops & Co. are interested in the project. The new refinery is to have a capacity of 1500 barrels daily. At the office of the George M. Newhall Engineering Company we learn that the plans have just been started and that they will not be ready for estimating for several weeks.

A new ore smelting plant is to be built by the Balbach Smelting & Refining Company of Newark, N. J. Having outgrown their present plant, the company have decided to erect a large new smelter in the Newark meadows on Newark Bay. At this plant the ores will be smelted and the product shipped to the present works to be refined. The contract for the buildings has been awarded to the Berlin Construction Company. There will be a 125-foot steel stock and a steam plant in connection with the smelter buildings.

The Manhattan Railway Company are negotiating for the erection and equipment of a new repair shop, to

be built on 180th street and La Fontaine avenue, New York City. Orders for the machinery equipment have not been placed as yet.

There is a well founded report in circulation in the trade here to the effect that the Harriman Railroad lines will build immense central repair and car shops at Salt Lake. A party interested stated to a representative of *The Iron Age* that the ground had been acquired and that \$1,500,000 would be spent in the work.

There is considerable talk in the street regarding the plans of the American Locomotive Company in the direction of improving their constituent plants. As recently mentioned in this column, the Schenectady shops are undergoing marked changes which are necessitating considerable purchasing of machinery. It is now rumored that \$100,000 is to be spent on the Richmond plant. This sum is to be spent in electrical equipment and machinery. As the intention of the company is to increase the number of locomotives to be produced per week at the various plants all types of machine tools will be required.

The Mergenthaler Linotype Company of Brooklyn, N. Y., have completed plans for a substantial addition to their present plant. The new building will be seven stories high and will be equipped throughout with new machinery.

It is reported that the Monterey Foundry & Machine Company of Monterey, Mexico, are considering the erection of an entire new plant for the production of railroad supplies.

Sealed proposals will be received at the office of the Supervising Architect, Treasury Department, Washington, D. C., until 2 o'clock p.m. on August 16, for laundry machinery for the United States Marine Hospital, Mobile, Ala.

Proposals will be received at the office of the Supervising Architect until August 22 for furnishing and installing new boiler plant for the United States Marine Hospital at Cleveland, Ohio.

Proposals will be received until Tuesday, August 27, by Major Frank Heath, Commander Frankford Arsenal, Philadelphia, Pa., for supplying hydraulic machinery, annealing furnaces and accessories for large caliber cartridge shops to be erected at Philadelphia.

Following are the bids submitted for the machinery to be installed in connection with other materials at the New York Navy Yard on proposals opened on July 23:

- Bidder 3. New Jersey Foundry & Machinery Company, New York City.
5. Edward J. Etting, Philadelphia, Pa.
 6. Joseph Gillmore, New York City.
 7. Q. H. & F. M. Roots, New York City.
 12. S. Obermayer Company, Cincinnati, Ohio.
 20. Manning, Maxwell & Moore, New York City.
 21. Bement, Miles & Co., Philadelphia, Pa.
 43. Prentiss Tool & Supply Company, 115 Liberty street, New York City.
 46. J. W. Paxson Company, 1021 North Delaware avenue, Philadelphia, Pa.
 50. Walter H. Foster, 126 Liberty street, New York City.
 55. H. A. Rogers, 19 John street, New York City.
- Class 22. One 10-ton cupola, one 7-ton cupola, one 5-ton cupola—Bidder 12, \$3153; 43, \$3895; 5, \$4107.50; 6, \$4356; 46, \$4671.
- Class 23. Two rotary positive pressure blowers—Bidder 46, \$5477; 7, \$5712, informal, no guarantee; 43, \$5925; 3, \$5967; 5, \$5985.
- Class 24. Two No. 2 wire feed screw machines with automatic feed—Bidder 32, \$1144.
- Class 25. One 6-ton fixed vertical gap riveting machine for boiler flues—Bidder 20, \$1400; 21, \$1550.
- Class 26. Two high pressure hydraulic double plunger test pumps—Bidder 55, \$287.50; 20, \$304.
- Class 27. One No. 9 plain grinding machine—Bidder 50, \$1860.

The following bids were opened at the Navy Department for machinery to be installed in the navy yard at Portsmouth:

- Bidder 1. Bullock Electric Mfg. Company, Cincinnati, Ohio.
2. Thresher Electric Company, Dayton, Ohio.
 3. The Triumph Electric Company, Cincinnati, Ohio.
 4. George Place, New York City.
 5. Manning, Maxwell & Moore, New York City.
 6. Becker-Brainard Milling Machine Company, Hyde Park, Mass.
 7. General Electric Company, Schenectady, N. Y.
 8. S. A. Woods Machine Company, Boston, Mass.
 9. MacKay Engineering Company, New York.
 10. Bement, Miles & Co., Philadelphia, Pa.
 11. McCay Engineering Company, Baltimore, Md.

12. Crocker-Wheeler Company, Ampere, N. J.
13. Niles Tool Works Company, Hamilton, Ohio.
14. Onondaga Dynamo Company, New York City.
- Class 1. One 3-inch forging upsetting and heading machine—Bidder 13, \$3075; 5, \$2940 and \$3525.
- Class 2. One double frame 2000-pound steam hammer—Bidder 10, \$1824; 5, \$1942.
- Class 3. One single furnace planing machine—Bidder 5, \$265; 4, \$424; 8, \$475.
- Class 4. Six bench trimmers—No bids.
- Class 5. One improved jointing and facing machine for buzz planer—Bidder 8, \$197.50; 4, \$215 and \$285.
- Class 6. One vertical milling machine—Bidder 13, \$1845; 6, \$1846.25; 5, \$1885.
- Class 7. Six 10 horse-power 110 volt direct current, low speed multipolar electric motors, shunt wound, for 150 revolutions per minute—Bidder 11, \$2790; 3, \$3300; 2, \$3750; 9, \$3804; 14, \$3843; 7, \$4200; 1, \$4290; 12, \$4734.

Following are the bids received at the Navy Department for tools to be installed at the navy yard at Boston:

- Bidder 2. Bement, Miles & Co., Philadelphia, Pa.
 3. Walter H. Foster, New York City.
 5. Niles Tool Works Company, Hamilton, Ohio.
 9. Manning, Maxwell & Moore, 85 Liberty street, New York City.
 10. Spencer Automatic Machine Screw Company, P. O. Box 1153, Hartford, Conn.
 13. Putnam Machine Company, Fitchburg, Mass.
- Class 1. One pattern makers' swing gap lathe—Bidder 9, \$465; 13, \$565 and \$690.
 - Class 2. One No. 2 double turret automatic screw machine with tools—Bidder 10, \$1671.50.
 - Class 3. One plate rolling machine—Bidder 2, \$4200; 5, \$4500; 3, \$4700; 9, \$4775.
 - Class 4. One plate planing machine—Bidder 2, \$2175; 9, \$2970; 3, \$3200; 5, \$3200.

Following are the bids received for the machinery to be installed in the navy yard at League Island:

- Bidder 1. Niles Tool Works Company, Hamilton, Ohio.
 5. Bement, Miles & Co., Philadelphia, Pa.
 6. R. C. Hoffman & Co., Baltimore, Md.
 7. Manning, Maxwell & Moore, New York City.
 9. Detrick & Harvey Machine Company, Baltimore, Md.
 10. New Haven Mfg. Company, New Haven, Conn.
 11. Putnam Machine Company, Fitchburg, Mass.
 13. Manhattan Supply Company, 160 Duane street, New York City.
- Class 1. One open side planer—Bidder 7, \$4000; 9, \$4133.
 - Class 3. One 8-foot vertical boring and turning mill—Bidder 1, \$3300; 7, \$3400; 5, \$3724.
 - Class 4. One horizontal boring, drilling and milling machine—Bidder 7, \$1750; 5, \$2007; 1, \$2050.
 - Class 5. One 20-inch back geared engine lathe—Bidder 1, \$615; 7, \$625; 10, \$657; 2, \$700; 11, \$850.
 - Class 6. One 20-inch engine lathe—Bidder 7, \$713; 1, \$730; 10, \$761; 2, \$800; 11, \$970.

The activity in building in Chicago during the first half of this year presents a most gratifying contrast to the showing made during the same period a year ago. In the six months ended June 30, 1901, permits were taken out for the construction of 3145 building improvements, estimated to cost \$17,779,965. These figures show a striking improvement over those of the first six months of 1900, when permits were issued for 1274 buildings, estimated to cost \$4,536,540. These small totals were, of course, due to the prolonged strike in Chicago, which brought nearly all building operations to a standstill in the earlier half of last year. To what extent operations were suspended may be gathered from the figures for the first half of the preceding year, 1899, when permits were taken out for 2118 buildings, estimated to cost \$11,865,200.

A remarkable scheme for the establishment of a kind of labor Utopia is being agitated among the members of the various labor organizations in and around New York City. The plan contemplates the establishment of an industrial federation, which, according to the prospectus, proposes, when it can dispose of 500,000 shares of stock on the installment plan, to build a city for 500,000 people. The people are to run everything, including banks, factories and all kinds of industries, and generally conduct the business of the city. That the scheme is decidedly visionary may be concluded from the fact that the site on Jamaica Bay, Long Island, selected for the city, is at present under water.

A German market report states that hoop makers in Silesia are selling bands in the local markets at 135 to 140 marks per metric ton, and are marketing the same article for export at 97.50 marks.

Pittsburgh of the Future.—II.

BY JAMES N. HATCH, STREATOR, ILL.

What is true for the whole State would probably be nearly true for Pittsburgh taken alone; for while some of the older works in the East may have become a trifle too decrepit to keep the pace, the great number of new works between Pittsburgh and the lakes would fully compensate for this loss.

One reason for the apparent extraordinary development in Pennsylvania is that here we watch one-half of the iron of the United States as it is produced in one comparatively small State, while the other half is scattered over the entire union. It is something like the fable of the ass, who thought all the world was green because his pasture was.

The pig iron production of Pennsylvania for 1897 was 4,631,634 tons, produced in several condensed localities, aggregating only a small portion of the 45,215 square miles of area; while the remainder of the United States produced 5,021,043 tons scattered over 3,025,600 square miles.

Early in its history Pennsylvania pushed to the front in the manufacture of iron, because it possessed good ores, an abundance of timber suitable for making charcoal and numerous small streams for turning water wheels; and because its people, especially its German settlers, appear to have possessed a greater genius for making iron than the people of any other section.

But without other special advantages than those mentioned Pennsylvania never could have attained her wonderful prominence as a manufacturer of iron. She possessed from the first superior facilities for supplying markets outside her own boundaries. In the East she had the Delaware River as a channel of communication with her neighbors, and when she commenced to make iron in Pittsburgh and its vicinity she had the Ohio River, by which, after 1811, when the first steamboat, the "New Orleans," was built in that city, she could command all the markets of the West. More recently she was the first to develop the use of natural gas in the manufacture of rolled steel and iron.

Something else must be said of Pennsylvania. Its far seeing iron manufacturers were the first in the country to realize the full significance of the change from iron to steel, which had commenced about the close of the Civil War. They saw the magnitude of the coming revolution and they had the courage at once to resolve to take a prominent part in it, so they invested a large amount of capital in Bessemer open hearth and crucible steel works, and with these they have been able to meet the coming extraordinary demand for steel rails, and for steel in all forms.

But why were these manufacturers more "far seeing" than those of other localities? Simply because they had more years of training. As soon as they saw the process for making steel so rapidly being cheapened they knew from their familiarity of the relative values of iron and steel that the latter was destined to replace the former.

When we consider the natural advantages in iron manufacture that Pennsylvania held almost a monopoly on for so long, it is almost a surprise that with her long training she was not able to gain rather than lose on the rest of the country.

Pittsburgh never gained much prominence as an iron manufacturing city until after the discovery of the Lake Superior ore, about the middle of the last century. Pig iron was not manufactured there at all until 1859 and steel not until a year later. The making of Bessemer steel began about 1866. It is only 36 years ago that Andrew Carnegie started in as an iron manufacturer, so the idea that the Pittsburgh district has been the pioneer of this country in the development of this industry is largely erroneous. Pittsburgh has kept pace with the rest of the country, but has followed rather than led. She has met the conditions that the other sections of the country have imposed upon her.

It was not known until the middle of the last century that the coal fields surrounding Pittsburgh were valuable

to the iron manufacturer; for "in 1854 this country made more pig iron with charcoal than with anthracite coal. The next year charcoal was passed by anthracite, but it was not until 1869 that it was passed by bituminous; anthracite continued to be the leading fuel until 1875." It will be observed that anthracite coal is not mined in the vicinity of Pittsburgh.

The use of natural gas in the mills, which was an important factor a few years ago, has now been forbidden, on account of the scarcity of gas.

In the light of these facts it may be interesting to inquire whether Pittsburgh really has the superior natural advantages she is supposed to possess, or whether her prominence in the iron industry is largely a matter of accident, and to investigate further with the hope of learning something of her future prospects. Will she continue to keep an even pace with the rest of the country; will she forge ahead, or will she fall behind? There are bound to be wonderful advances in all lines in the next 50 years, and is it not interesting to contemplate what influences these developments will have?

The consolidation of great industries that are at present being formed in all branches of the iron business have a tendency to centralize an immense business around a place like Pittsburgh, where there is already a good start, but unless these concentrations are in unison with the natural laws of commerce they cannot stand. They are bound to collapse sooner or later unless they are found to be moving in the natural current of industrial progress. And even with these great consolidations, after they are firmly established, there may be a sort of colonization scheme put into vogue. These great companies may begin to branch out and look for more advantageous locations. It is hard to forecast the future when the requirements of the future are impossible of determination.

The much talked of canal from Pittsburgh to the lakes would have a great influence on that city, but would it be a beneficial one? Would it not be cheaper to take coal and coke to the lake on the small river craft than to attempt to take the ore to Pittsburgh on the lake craft, especially since ore vessels are now being used over 500 feet long and of 8000 tons burden?

Experience has shown that Connellsville coke may be profitably taken many hundred miles west to meet the ores of Lake Superior, especially since our blast furnace practice has been so perfected that we can make a ton of pig iron with less than a ton of coke. Other things being equal, it ought to be as economical to take Connellsville coke to the Western furnaces as to bring Lake Superior ore to the Pennsylvania furnaces.

But, granting that the chances are not against Pennsylvania so long as she can depend on Lake Superior ores, does this source of supply promise to hold out indefinitely? The *Iron Ore* of Ishpeming, Mich., commenting on this subject, says: "The taking of from 10,000,000 to 15,000,000 tons of ore from the Michigan and Minnesota mines each year leaves a sad scar. The hole is an immense one; there is no ore being put into the mines to take the place of that sent away. Nature is making no provision for a restocking to take the place of the depleted deposits. The time is not far distant when the mines of rich Bessemer ores will be exhausted and then the non-Bessemer ores will have to be drawn upon, the basic or some other process being used to secure the desired steel. New mines of ore do not come so readily as new mines of copper; the yearly extraction of from 200,000 to 800,000 tons of ore from a single property lessens the main store not a little. The drain is an enormous one, and while the ore is spoken of as miles in length in the new fields in Minnesota it soon melts under the work of the steam shovel. These big deposits are not at all fat. There are many lean streaks. It is important that the miner secure something for his labor and investment while the work of mining is going on. Each added year lessens his capital stock considerably."

How great this scar made by each year's output is, may be realized when we think that 15,000,000 tons of ore represents an excavation equivalent to 30 acres, dug to an average depth of 100 feet; this not including the earth and rock incidentally removed.

It is by the Bessemer process with the rich Lake Superior ores that Pittsburgh has been able to keep so far in the lead of any other section. When this ore is all worked out who can say that the remaining ore in that region will be any better than the Southern ores or the ores of Western States?

C. M. Schwab, president of the Carnegie Steel Company, in an article in the *Engineering Magazine*, makes the following comment on the prospects of the future of Bessemer steel: "It may be added that the open hearth process will continue to gain on the Bessemer, and many believe that the latter is going slowly step by step, the way of the puddling furnace, but the time for numbering its days of usefulness is still remote. However, the additions to productive capacity now building and projected in the United States are in the great majority of cases for open hearth steel. This change, it may be said, has been accelerated in this country largely by reason of the failing ore supply, with the consequent shortage of Bessemer iron, necessitating recourse to the open hearth process, which uses scrap iron and steel, the supply of which is comparatively abundant. Bessemer still holds first place in the United States, the output last year amounting to 72 per cent. of the total, which, however, is a loss of 10 per cent. in six years."

Now suppose that it were found after a few more years that other sections of the country had as good ore near by as Pittsburgh could get from Lake Superior and that these other sections were about as well supplied with coal as she, all that would then be lacking would be the excellent Connellsville coke; but as was said above, it costs no more to ship the coke than it does the ore, therefore for steel that was to be used in the West or South there would be a decided balance in favor of the local producer in the item of shipping the finished product from Pittsburgh back to where it was to be used. If the West and South develop as much as it is expected they will, there will be a tremendous market for steel in these regions in the future; while in the East the opportunities of great development are largely problems of the past.

Again, if some efficient method of making good coke from the Western coals were invented, what would happen to the center of the iron industry? Even with the Michigan and Minnesota ores steel could be produced much cheaper in the vicinity of Chicago than in Pittsburgh, if the necessary fuel were procurable at about the same rate. For export trade the South would seem to hold a great many natural advantages.

The methods of steel manufacture in this country, and in the whole world, for that matter, are only in their early stages of development. The United States has been making steel on a commercial basis scarcely 40 years, and yet more than half of the steel producing plants are using antiquated methods, simply because the changes in methods and machinery have been so rapid that it was almost impossible to keep up with the improvement. A new plant will scarcely be installed and in running order before her machinery is out of date, and it is time to begin to replace it with something newer and better. What the future holds in store for the steel industry it cannot be predicted, but the probabilities of Pittsburgh holding her present place, either as an individual producer or as a factor in the steel production of the United States, seem to depend on circumstances that might become inoperative at almost any moment.

The plant of the Atlantic Tube Company, at Beaver Falls, Pa., was sold at receivers' sale, Tuesday afternoon, August 6. The property was bid in by Samuel L. Robertson of Pittsburgh for \$300, subject to the two mortgages, aggregating \$175,000. The works have been closed for a month, pending the sale, but it is thought will be started soon.

The London *Telegraph* says that the Cunard Steamship Company are preparing to build a transatlantic steamer capable of making 25 knots an hour. She will be built so that she can be used as an armored cruiser, and it is possible that she will have a protective deck.

On the Effects of Repeated Strains in Structures, as Exemplified in the Brooklyn Bridge Fractures.

BY JAMES E. HOWARD, WATERTOWN ARSENAL, MASS.

The failure of the suspension rods and straps under the conditions of service said to have existed or to exist in the Brooklyn Bridge hardly justifies the appellation of accident to the affair by one acquainted with the details of its construction. Rods of different lengths, connecting members which might be considered rigid, comparing the main cables and longitudinal trusses with the suspension rods, compelled by reason of their position and connections to take practically the same longitudinal movements at their lower ends, but different angular movements in response to thermal changes, the stresses varying even more than the differences of the versed sines of the arcs described by the ends would indicate, rods working against the frictional resistance of trunnions of larger diameter than the body of the rod, and the effective diameter of the latter reduced by a screw thread—these go to make a state of affairs well calculated to ultimately end in the rupture of the material.

If the relative ages of the several fractures can be determined, very naturally those nearest the center of the bridge might be expected to appear the oldest. When the strains due to thermal causes reach their maximum and when those suspension members which are from their dimensions least able to meet those changes are found at the same place in the bridge, then the initial rupture might certainly be looked for in that vicinity. It is not necessary to invoke defective material for a reason of failure; on the contrary, it indicates particularly good material that will endure such conditions for a period of two decades of years.

The proximate cause of these fractures is doubtless the alternation of strains due to thermal changes, the weight of the structure, augmented by occasional live loads of greater or less magnitude, contributing the necessary resistance to introduce overstrains in the weaker parts. The effect of repeated alternate strains toward causing final rupture in all grades of steel is well known. The early experiments of Wöhler and Spangenberg have been confirmed and extended by other experimenters, and tests of this kind are still in progress, having for their object the investigation of the effects of repeated stresses on the endurance of metals. The tests all show that repeated alternate stresses much below the tensile strength eventually produce rupture, and there are instances in which stresses materially below the elastic limit have also ended in rupture. Under loads well within the elastic limit the number of repetitions necessary to cause rupture is very great. In the class of railway material, axles are known to be in service which have successfully endured 200,000,000 repetitions of loads. As the magnitude of the loads increases the limit is reached when a single application may produce rupture. Sufficient experimental knowledge is at hand to enable us to recognize what is ordinarily a dangerous zone as regards the limit of stress safe to put upon steel of different grades, and it is imperative that such limits should not be exceeded in structures intended to be permanent.

It will be understood that these remarks apply to cases of repeated alternate loads, the problem being a different one for constant loads acting in one direction.

Referring to the conditions as they appear to have been in the bridge, it has been stated in an engineering journal that the suspension rods were made of mild steel. Now considerable confidence is often reposed in a metal which displays great toughness in its original state, and the assumption entertained that such toughness indicates superior qualities of endurance under excessive strains. Experiments show that the original properties remain only when no overstraining occurs.

A low elastic limit means in this case a limited range of stresses, which, if exceeded, soon ends in rupture, and this may take place without practically any development of toughness. That is, repeated bending in opposite directions will result in the rupture of mild steel with the

same appearance of brittleness characteristic of harder steels. The mild steel has this disadvantage, that such brittleness of fracture may be more easily reached than with a medium hard steel, although both steels will act in a similar manner after appropriate overstraining. The use of mild steel in a suspension rod of this design by no means provides a metal capable of enduring alternate bendings of severity.

Then we have the presence of a screw thread on the rod where the bending moment is greatest. There is nothing worse than this to promote rupture. The normal display of ductility takes place in a bar of uniform cross section. Where abrupt changes occur in sectional area general elongation of the metal is restricted and overstraining soon brings about incipient rupture, a fact so well known as to require no further comment. The appearance of overstrained metal differs nowise from the same in its primitive condition, when the overstraining forces have but slightly exceeded the elastic limit at each repetition, although the metal may be on the verge of rupture. An unfinished bar strained beyond the elastic limit has the scale of magnetic oxide on its surface disturbed. Actual rupture can, of course, be ascertained by a hammer blow on the member, as car wheels are examined in the truck. These illustrations do not meet the case of the suspension rods, and it is not thought that ordinary methods of inspection are adequate to tell whether an intact rod is dangerously near the point of fracture or in its original state as regards its tensile properties. Merely looking at the metal would bring out no information of this class, even if the entire length of rod was exposed to view, the critical parts not obscured. It is known that the modulus of elasticity is temporarily lowered in bars overstrained by tension. Careful observations have seemed to show that such may be the case in bars overstrained by alternate bending stresses. It would not be feasible to employ means adequate to detect overstraining, in this manner, on these bridge rods.

In experimental inquiry on the endurance of steel bars to repeated loads, mild steel, which in the tensile test would elongate 20 per cent. before rupture, has been fractured by alternate tensile and compressive stresses without elongating 1000 inch, measured on a length of 10 inches. These tests were with rotating shafts transversely loaded. The controlling feature is that of strains in the metal and there is no reason for supposing that the steel would behave differently in any other place where it encountered strains corresponding to those which caused its destruction in the experimental shaft.

Under these circumstances a careful determination of the magnitude and frequency of the strains is essential in order to judge understandingly of the present condition of the metal. The most conscientious inspection of a structure conducted without this information, it is believed, might and would be in many cases futile.

A few facts may be learned with accuracy from the appearance of the fractured surfaces. It is possible to tell the direction in which the fracture traveled along a granular surface, enabling a line of rupture to be traced back to its origin. The relative ages of different parts of a ruptured surface may in some cases be ascertained. The absolute age of a fractured surface is not easily told. In the majority of cases no trustworthy opinion can be formed.

The speedy British torpedo boat destroyer "Viper," the first vessel of her kind to be fitted with Parsons' turbine engines, was totally wrecked last week off the island of Alderney, in the English Channel. The "Viper" was the fastest craft afloat, having repeatedly maintained an average of over 34 knots an hour on her various trials. Although only 210 feet long, 21 feet beam, 12 feet 6 inches draft and 325 tons displacement, her engines developed more than 10,000 horse-power.

Ground was broken on Tuesday preparatory to the construction of the third new East River Bridge, which is to connect Manhattan with the Williamsburg section of Brooklyn.

HARDWARE.

IN the opinion of many men in the trade that was an unlucky day when manufacturers first offered to guarantee prices. If it had been done for the sole purpose of getting advance orders upon which the factory force might be at work, it would have done little harm; but when it was offered as a bait to get an order booked, so as to make sure of it not going to some other manufacturer, it then became a club that battered down old and safe ways of doing business.

When the Axe makers in January solicit orders for the next fall's Axes the merchant can very truthfully say to them that it is a little early as yet; that he has not heard from other makers; that prices are not settled in raw material, and that he prefers to place his order later. These are all good reasons for delay from his standpoint. But the manufacturers are out to secure orders to keep their factory busy and to learn definitely what their orders are to be for the coming season. They want the order then and there. In order to make it safe for the merchant to buy of them immediately they offer to guarantee prices against any decline they may make during the season, and against any lower prices that may be offered by any of their competitors. If the merchant wants the goods he is abundantly protected as to prices, and nothing is gained by delay.

Having made sure of his Axes within a certain price, the merchant, if a jobber, reasons that if it is safe and sensible for him to buy his stock of Axes, why is it not equally safe and sensible for his customers to buy their stock from him on the same guarantee? And he starts his men in the spring to take orders for Axes for the fall. The practical result of this is seen in demoralization of trade. Whatever it may seem to be in theory, the practice works out in many harmful ways. It induces the retailer to order many months before there is the slightest need of his doing so. Goods are sent to him and dated ahead, so as to leave no loophole for countermanding an order. The guarantee obviously tends to demoralize prices rather than sustain them. As a result it rarely happens that the jobber's customer would not have been able to do better had he waited until the proper season before placing his order.

The practice, too, presents inducements to the average buyer to be tricky and underhanded when his desire is to be frank and open handed. Though he has placed his order with A, under a guarantee, it is not to his interest that B shall know of this if he wants to learn B's lowest price. As the various salesmen call upon him he is anxious to learn their very closest figures, that he may have the advantage of this knowledge in settling with A. These men would not ordinarily quote their inside price if they knew his order was placed, so he must temporize with them and deceive them.

The guarantee also opens the way for revenge with the small minded class who feel that every sale lost is a personal matter and must be evened up in some way that shall do harm to the other party. This class, having found that a competitor is ahead of them with orders taken at guaranteed prices, promptly makes a cut price that shall cause loss in confidence, if not in cash. This policy leads to reprisal at the other end, and works harm all along the line.

It is to the interest of every line of business that merchants should not overstock. The retailer who buys oftenest is the one who pays promptest and sells at the best prices. The jobber who overbuys is a menace not only to his competitors, but to his own customers, for he is tempted to demoralize prices to cut down his stock. And the reed upon which those who overstock lean is the manufacturers' guarantee of prices. If that was abolished many of the evils complained of would disappear.

Mention has been made in the daily press of the probability of a consolidation of the Hardware jobbing interests in an important city. While nothing has as yet been consummated in this direction, the scheme is not entirely new, inasmuch as some prominent Hardware jobbers have openly advocated consolidation as a means for the cure or relief of evils which are affecting this branch of the trade. Those who have closely watched the course of things can see certain tendencies leading in the direction indicated, and the application of these theories in some of the important trade centers would not be surprising. The present course of things, while reasonably favorable to the jobbing trade, is not entirely satisfactory, and those who are watching trade tendencies are solicitous for the future of these interests. While the jobbing trade is holding its own remarkably well, there is evidently a disposition on the part of some of the larger and more important merchants to deal direct with the manufacturers.

Condition of Trade.

The trade is feeling in several directions the effect of the strike among the Steel workers. There is increasing difficulty in getting certain kinds of goods the manufacture of which is interfered with by scarcity of material. The Tin Plate market is much affected in this way and practically all goods in the production of which Sheets are used. Other lines also are suffering in a similar manner, though not to so great an extent. The tone of the market continues strong and prices as a general rule are well maintained, with something of a tendency toward higher values. The volume of business is excellent, and the demand is evidently stimulated by the fear of a possible shortage of goods, owing to the continuance of the strike or to the absorption of goods in consequence of the activity of business. There is naturally some uneasiness in regard to the effect of labor agitations, but the trade are generally taking a hopeful view of affairs, anticipating that the existing disturbance will not be of long continuance. Stocks generally in hands of manufacturers and merchants are fair, but not heavy, the character of the demand being such as to prevent accumulations in warehouses or stores. The retail trade are buying freely, most merchants finding that business conditions justify their keeping stocks up and pushing trade with enterprise.

Chicago.

(By Telegraph.)

The demand for Shelf Hardware keeps up in a most gratifying manner in the face of labor troubles, short crop talk and other influences which might be expected to considerably curtail business. The excellent condition of business is shown by the statement made by the leading jobbers, that although their trade in each month of this year showed heavy gains over the corresponding month of last year and it had been expected that the most active season of this year had been passed, yet the percentage of gain shown by July over July of last year was larger than that of any other month. Further

than this, the activity in the demand shows no indication of subsiding. All classes of goods are in heavy request, but probably those are most urgently sought in which the danger exists of a shortage in the supply on account of the strikes in mills. Special urgency is shown for more rapid delivery of Sheets, Tin Plates and the fall and winter goods manufactured from Sheets. Great trouble has been experienced for several years in securing satisfactory supplies of such seasonable goods, and when this apprehended scarcity is augmented by a strike in the Sheet Mills, the fear of a very serious shortage causes a greater attempt to secure stock. Prices on Sheets and Tin Plates have advanced rapidly and almost no stocks are now to be found in the hands of the Hardware jobbers. Stocks of Tinware and Stamped Ware are also seriously broken, and although prices on these have not advanced recently, they may be expected to be marked up at any time. The activity in building continues, and the demand for Builders' Hardware and all kinds of Building Supplies was never better. The Heavy Hardware jobbers report no falling off in the demand for the lines which they handle. Trade is particularly active in Iron and Steel, owing to the prolongation of the strike in some of the Bar mills. Stocks in jobbers' warehouses are in most cases badly broken.

NOTES ON PRICES.

Wire Nails.—The demand for Wire Nails continues in satisfactory volume, and mills are employed filling orders. Quotations remain unchanged, as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots.....	\$2.30
To jobbers in less than carload lots.....	2.35
To retailers in carload lots.....	2.40
To retailers in less than carload lots.....	2.50

New York.—Local demand for Wire Nails keeps up remarkably well for the season at unchanged prices. Quotations are as follows:

To retailers, carloads on dock.....	\$2.53
Small lots at store.....	2.60

Chicago, by Telegraph.—Manufacturers of Wire Nails report business continuing in excellent shape. Orders are numerous and call for fairly large quantities. Thus far no indication is seen of the advent of the usual dull season. Local jobbers are also enjoying a very good trade and find that manufacturers are not particularly prompt in making deliveries, some sizes being hard to get. Carload lots are quoted at \$2.45 and small lots at \$2.55, with a concession to \$2.50 to best buyers.

Pittsburgh.—There is a very satisfactory demand for Wire Nails, sales for July having been much larger than expected. It is thought August will show up equally well. A number of large independent Wire Nail mills are now soliciting trade, and in some cases are shading prices. Quotations remain unchanged as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots.....	\$2.30
To jobbers in less than carload lots.....	2.35
To retailers in carload lots.....	2.40
To retailers in less than carload lots.....	2.50

Cut Nails.—The Cut Nail market is unchanged in its general condition. Demand continues in about former proportions. Quotations are as follows, f.o.b. Pittsburgh, plus the actual freight to point of destination, terms 60 days, or 2 per cent. off in 10 days:

Carload lots.....	\$2.00
Less than carload lots.....	\$2.05 to \$2.10

New York.—Local demand for Cut Nails is about the same as for some time past. New York quotations for carload and less than carload lots are based on the above prices, to which Pittsburgh freight is added:

Carload lots on dock.....	\$2.13
Less than carload lots on dock.....	2.18
From store.....	\$2.18 to 2.25

Chicago, by Telegraph.—The volume of business in Cut Nails is well maintained within the usual limits. Small lots are held at \$2.35.

Pittsburgh.—July prices on Cut Nails have been re-

affirmed for August delivery. The mills have taken action to prevent cutting in prices. The tone of the Cut Nail market is not strong by any means. Quotations are as follows, f.o.b. Pittsburgh, plus the actual freight to point of destination, terms 60 days, or 2 per cent. off in 10 days:

Carload lots.....	\$2.00
Less than carload lots.....	\$2.05 to \$2.10

Barb Wire.—More prompt deliveries of Barb Wire are being made by the mills. Local demand in the East is light and is easily supplied from jobbers' stocks. In the West requirements are still quite large. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots, Painted.....	\$2.60
To jobbers in carload lots, Galvanized.....	2.90
To jobbers in less than carload lots, Painted.....	2.65
To jobbers in less than carload lots, Galvanized....	2.95
To retailers in carload lots, Painted.....	2.70
To retailers in carload lots, Galvanized.....	3.00
To retailers in less than carload lots, Painted.....	2.80
To retailers in less than carload lots, Galvanized...	3.10

Chicago, by Telegraph.—The mills are making a little more progress in catching up with orders on Barb Wire, but are not yet able to make prompt shipment. Local jobbers are pleased with the manner in which orders continue to flow in, but would be more pleased if they were able to get satisfactory deliveries from the manufacturers. Carload lots are quoted at \$2.75 for Painted and \$3.05 for Galvanized. Less than carloads are quoted at \$2.85 and \$3.15, respectively, with a shading of 5 cents to the best trade.

Pittsburgh.—There is still some difficulty in getting prompt delivery of Barb Wire, but, as a rule, the mills are able to furnish it as fast as wanted. Demand is heavy and the tone of the market is firm. For domestic trade we quote: Galvanized Barb Wire, \$2.90, in carload lots to jobbers, and Painted, \$2.60. Terms 60 days net, 2 per cent. discount for cash in 10 days, f.o.b. Pittsburgh.

Plain Wire.—Manufacturers have not reached a point where they can supply Plain Wire as promptly as purchasers desire. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days:

	Base sizes.	
	Plain.	Galv.
To jobbers in carload lots.....	\$2.25	\$2.65
To jobbers in less than carload lots.....	2.30	2.70
To retailers in carload lots.....	2.35	2.75
To retailers in less than carload lots.....	2.45	2.85

The above prices are for the base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances.

6 to 9.....	Base.....	\$0.40 extra.
10.....	\$0.05 advance over base.....	.40 "
11.....	.10 " " " ".....	.40 "
12 and 12½..	.15 " " " ".....	.40 "
13.....	.25 " " " ".....	.40 "
14.....	.35 " " " ".....	.40 "
15.....	.45 " " " ".....	.75 "
16.....	.55 " " " ".....	.75 "
17.....	.70 " " " ".....	1.00 "
18.....	.85 " " " ".....	1.00 "

For even weight bundles, 50 pounds and over, 5 cents per bundle advance on above.

Chicago, by Telegraph.—The situation in Plain Wire presents the same characteristics noted in previous reports. The volume of business is heavy and mills are still unable to make prompt shipments on orders received. Carload lots are quoted at \$2.40, base, and small lots from stock at \$2.50, with \$2.45 quoted to the best trade.

Pittsburgh.—There is a good demand and the mills are still somewhat behind in deliveries. Prices are firm, and for domestic trade we quote:

	Plain.
To jobbers in carload lots.....	\$2.25
To jobbers in less than carload lots.....	2.30
To retailers in carload lots.....	2.35
To retailers in less than carload lots.....	2.40

Galvanized Wire up to No. 14 is 40 cents advance on Plain; Nos. 15 and 16, 75 cents advance, and Nos. 17 and 18, \$1 advance. Terms are 60 days net, with 2 per cent. off for cash in 10 days, f.o.b. Pittsburgh.

Wagon and Carriage Springs.—The market for Wagon and Carriage Springs continues in excellent condition, with a good deal more regularity in prices than is usually experienced. In a general way quotations of Eastern makers seem to be slightly higher than those in the West. The present price is represented by the quotation of 5 cents for small lots, a concession of $\frac{1}{2}$ a cent a pound being made on orders of 25 pairs all alike, which is referred to as the extreme price on large lots.

Morrill Pattern Saw Sets.—Some of the manufacturers of the Imitation or Morrill pattern Saw Sets have recently been conferring in regard to prices, and have reached an agreement embodying something of an advance.

Poultry Netting Staples.—Somewhat higher prices are ruling for Poultry Netting Staples, owing principally to the expiration of contracts which were made at a comparatively low figure.

Silver Ware.—The Silver Ware market is referred to as in an excellent condition, with a very good demand, which is taxing the facilities of the manufacturers. The outlook is that the fall business will be of large volume.

Building Papers.—The market in Building Papers is fairly steady, dealers getting the best prices they can, which is in a measure contingent on the amount of material a buyer can use and how well posted and shrewd he is in buying, a condition that frequently makes a difference in price of from \$1 to \$5 a ton on Tarred Roofing Felt. This material has recently been offered at \$24 per ton for No. 2 Tarred Felt; Two-Ply Roofing, 108 square feet, 40 cents per roll; Three-Ply Roofing, 108 square feet, 60 cents per roll, which, if the weight is up to standard, would put the two latter on a basis of \$20 a ton, f.o.b. works in Pennsylvania. There are some local disturbances where exceptional prices are made, one of which is a contest in Chicago between one of the oldest companies in the business and the youngest manufacturing coal tar products, which has caused some round lots of 500 tons or more to be sold in the Northwest for delivery at lake ports at \$20 a ton for Tarred Felt Roofing.

Cordage.—While the demand for some classes of Cordage has improved, the Rope market continues in an unsatisfactory condition. Rumors are still to the effect that inferior fibers are used to a greater or less extent in Manila Rope by some manufacturers. While others disdain using adulterants, there is enough mixed Manila Rope on the market to cause low and irregular prices. Sisal Rope naturally sympathizes with Manila in price. Manila Rope, on the basis of 7-16-inch and larger, is quoted at $9\frac{1}{2}$ to 10 cents per pound. Sisal Rope, on the same basis, is quoted at 7 to $7\frac{1}{4}$ cents per pound. These quotations are sometimes shaded $\frac{1}{4}$ cent for larger quantities.

Paints and Colors.—*Leads.*—The market for White Lead in Oil continues quiet, which is not an unexpected condition at this season. Quite an inquiry is reported for fall delivery, but in the present condition of the Linseed Oil market grinders are not inclined to name prices acceptable to large purchases. Quotations are as follows: In lots of 500 pounds or over, $6\frac{1}{2}$ cents; in lots of less than 500 pounds, 7 cents per pound.

Oils.—*Linseed Oil.*—Buying is confined to small lots to cover immediate requirements for Linseed Oil. Some resale Oil is reported as having been offered at 78 cents for prompt delivery, but without attracting much attention from buyers, who are looking for lower prices. Quotations are unchanged, as follows: City Raw, 82 cents per gallon in lots of five barrels or more; 83 cents in lots of less than five barrels. State and Western Raw Oil, 80 to 81 cents, according to quantity. Calcutta Raw Oil, 85 cents per gallon. Boiled Oil, 2 cents per gallon advance on Raw.

Spirits Turpentine.—An advance in the price of Turpentine in Southern markets has caused higher local quotations. This has curtailed buying, which is confined to small lots. The market is firm at the following quotations, according to quantity: Southern, 37 to $37\frac{1}{2}$ cents; Machine Made Barrels, $37\frac{1}{2}$ to 38 cents per gallon.

KITSELMAN BROS.' NEW PLANT.

KITSELMAN BROS., Muncie, Ind., are now actively at work installing the machinery for a wire drawing mill. They recently secured possession of what is known as the Patton Hollow Ware plant at Muncie and are using the buildings for their purposes. The property acquired is well adapted for a factory of this character. The grounds contain 11 acres, affording ample room for contemplated additions to the large buildings already erected. These consist of a main building, 50 x 450 feet, with an engine room attached; a foundry room, which will be used as a galvanizing department, 130 x 250 feet, with an extension 50 x 80 feet; a warehouse, 100 x 150 feet, and a storage room, 50 x 125 feet. The machinery now being installed will have a capacity to produce 60 tons of wire daily. The firm have hitherto been manufacturing Woven Wire Fencing, but intend to turn out Wire Nails as an additional product. They expect to increase their Fencing department to comprise 50 looms, which will weave daily 50 miles of Coil Spring Wire Fence. They also manufacture a portable Woven Wire Fence Machine, which is stated to be the only machine of its kind made. The new plant is to be in operation about September 1.

SUPPLEE HARDWARE COMPANY'S NEW CATALOGUE.

SUPPLEE HARDWARE COMPANY, Philadelphia, Pa., have just issued a cloth bound, illustrated catalogue of 267 pages, each $12\frac{1}{4}$ x $9\frac{1}{4}$ inches, devoted to Builders' Hardware and allied goods, which is especially suitable for architects and the retail trade. Pages 4 to 16, inclusive, contain numerical lists of Locks, Latches, Door Knobs, Escutcheons, Push Plates, Padlocks and comparative lists of Cabinet, Trunk and Pad Locks, a comparative list of the finishes of seven of the leading manufacturers of Builders' Hardware, together with illustrations and descriptive matter showing the hand of doors and how to select suitable Locks. The company expect to issue a new general catalogue of all Hardware about the first of the coming year.

LOMBARD & CO.'S NEW CATALOGUE.

LOMBARD & CO., 236-238 A street, Boston, Mass., have just issued a fine illustrated catalogue of their Grindstone product, including Stones to run by power and hand, Grindstones for use on shipboard, Grindstone Fixtures, both hand and power; Holystones, Curriers' Rub Stones, Glass Cutting Stones and Wheels, Curve and Beveling Stones, &c. This business was established in 1827, and the concern operate their own quarries in Nova Scotia and New Brunswick, besides being large importers of English Stones. They have for some time been making a specialty of Grindstones for glass cutting, used by glass bevelers and opticians.

A REQUEST.

True & Blanchard Company, wholesale and retail merchants, Newport, Vt., advise us that they are about to issue a neat little catalogue, to be distributed among their retail trade, and as this is their first attempt in this direction they would be pleased to have samples of such catalogues from any of our readers who have issued them, and will be pleased to send one of theirs when completed.

WE are advised by the White Mountain Freezer Company, Nashua, N. H., that the daily newspaper accounts of the fire in that city on the 26th ult. were greatly exaggerated so far as their loss was concerned. The company are in a position to execute all orders promptly. They luckily escaped with the loss of their foundry building and one or two other small buildings of less importance. They succeeded in saving the balance of their plant, and business has not been interrupted in the slightest degree.

Notes on Foreign Trade

CONDITIONS IN THE PHILIPPINES

LETTER FROM A GENTLEMAN IN NEGROS TO A FRIEND IN THIS COUNTRY.

Your statement that you would be willing to endure the hardships of the place for five or six years if you could gain a competency in that time shows that you have quite a mistaken idea of the climate here. It is a delightful climate. Heat a little trying, but only two or three months of the year. Of course, localities are important to bear in mind. A good location near the sea, and you will like the climate. I always had colds and sore throat at home. Here I have passed seven months without anything of the sort. No grip, none of the common scourges of our changeable climate. The thermometer has not yet been above 98 or 99, and not below 80. Lots of rain and humidity intense, making the heat trying. A man predisposed to malaria should stay away. A man not predisposed to it, with reasonable caution will have no serious trouble with it. It is a delightful climate—superior to ours for health and enjoyment.

You cannot make a competency in the Hardware trade here in any five or ten years. It will take you three years to get acclimated and in touch with the ways of the country enough to be able to invest wisely. The islands are in a state of poverty, devastated by long and expensive wars. Your business will be a growing one, but will grow slowly—very slowly.

I cannot speak for Manila, but I am sure you will have strong competition there or elsewhere. At Iloilo there is a big general store owned by a British syndicate who have stores in all this part of the world. I can buy anything there is in the Hardware line at about 25 to 50 per cent. more than I would have to pay in America. They have their own steamer line and will be hard people to compete with, I imagine. Their prices are very reasonable and goods of good quality. They supply all this part of the islands.

No, I cannot advise you to come except on one condition, that you move here to settle down for 15 or 20 years, and work along patiently as you must at home. There are lots of fortunes going to be made here, and lots of them lost, too.

BRITISH LETTER.

Offices of *The Iron Age*, HASTINGS HOUSE, 1, NORFOLK STREET, LONDON, W. C.

The Australian Trade.

British exporters are looking with some anxiety to their trade with Australasia. Next to India and Germany, British exporters in the metal trades do the largest business with the island continent. We annually export thither nearly \$120,000,000 worth of goods, no small proportion of which is metals and Hardware. Bearing in mind that our total exports to British colonies and dependencies only reach about \$450,000,000, it at once becomes evident how valuable is the Australasian market to Great Britain. Latterly, however, there has been a certain coyness among Australian buyers which has proved a little disconcerting. It is true that our business still increases, but not by any means in the same ratio as formerly. The Australasian census returns for 1901, of which a preliminary summary has just been issued, indicates clearly that the flow of immigrants has practically ceased. For Australia proper, the census of March 31 shows an increase in 10 years of 593,975, compared with 930,620 during the previous decade. The population has increased only 19 per cent., as compared with 41 per cent. for the ten years ending 1891. But the position is even worse than these figures indicate, because the greater part of the increase, about 12 per cent., belongs to the first five years of the decade, the second quinquenniad showing only an increase of 6 per cent. New Zealand has done better, the population of those islands having risen by 146,000, or 23 per cent. It is a little significant, too, that New South Wales, the parent

colony, where agriculture and general commerce continue to flourish under free trade régime, is the only colony, with the exception of the mining centers, which shows much vitality. In addition, it must be recognized that during the last four or five years American exporters have been making considerable headway in these regions. There can be but little doubt that here is a market which Americans can with confidence cultivate. I have endeavored to extract from official sources the extent of the trade done by Great Britain with Australasia in metal goods, and herewith append the result in the shape of a tabular statement:

British Metal Exports to Australasia.

	Six months ended June 30,		
	1899.	1900.	1901.
Copper (wrought):			
Australia			\$261,480
New Zealand.....			30,270
Cutlery:			
Australia			348,606
New Zealand.....			74,325
Hardware:			
Australia			548,655
New Zealand.....			161,480
Iron (pig):			
Australia			176,600
New Zealand.....			54,815
Iron (bar, angle, bolt and rod):			
Australia			515,390
New Zealand.....			165,350
Iron and steel (railroad of all sorts):			
Australia			975,650
New Zealand.....			148,060
Wire of iron or steel:			
Australia			381,280
New Zealand.....			191,115
Hoops, sheets and boiler and armor plates:			
Australasia
Hoops:			
Australia			88,650
New Zealand.....			37,110
Sheets and boiler plates:			
Australia			83,130
New Zealand.....			40,390
Galvanized sheets:			
Australia			1,747,455
New Zealand.....			270,080
Tin plates and sheets:			
Australia			514,045
New Zealand.....			85,300
Cast and wrought iron:			
Australia			2,027,105
New Zealand.....			486,950
Steel (unwrought):			
Australia			776,290
New Zealand.....			159,865
Manufactures of steel or of steel and iron combined:			
Australia			118,445
New Zealand.....			56,190
Steam engines:			
Locomotives:			
Australia			506,460
New Zealand.....			52,110
Agricultural:			
Australia			48,780
New Zealand.....			41,070
Other descriptions:			
Australasia			703,205
Machinery:			
Agricultural:			
Australia			75,960
New Zealand.....			55,970
Sewing machines:			
Australasia			9,110
Mining machines:			
Australia			348,935
New Zealand.....			15,475
Textile machines:			
Australasia			58,520
Other descriptions:			
Australasia			1,724,070

With regard to the present commercial position, mail reports from Melbourne up to June 12 say that the distributing trade maintains an average volume, although large transactions are not numerous. Tariff uncertainties and the approach of the half yearly stock taking restrict business. The total bank clearances in Melbourne since January 1 was over \$360,000,000, an increase of more than \$27,000,000 on the corresponding period last year. The total bank clearances in Sydney amounted to \$325,000,000, an increase of \$23,000,000 on the comparative period.

A Note from South Africa.

I have been favored by a friend with a glance at a letter from an engineer in South Africa occupying a high official position. What this gentleman says is worth pondering, and I venture to reproduce his remarks with reference to trade prospects:

Of the distant future it is more difficult to speak, but I look for a period of considerable depression, not to say disaster. I am speaking now of trade and not of military matters. People here expect unbounded prosperity, prices are high and holders of property sanguine. But I cannot see on what their expectations are founded. It is a fact, proved by the earnings of the Government railway, which are a very good index, that from 1896, notwithstanding the fact that the output of gold on the Rand was increasing steadily, the earnings of the railway were as steadily falling, the reason being that more and more trade was being diverted to Durban and Delagoa Bay, which routes, while increasing the sea freight by about one-twelfth, reduced the land carriage by one-half. I cannot see that the result of the war will do anything but increase that diversion, for the mine owners will have a lot of loss to make up and strict economy will be the order of the day. The farming industry, the staple industry that alone is permanent in all lands, is ruined in the Transvaal and Free State, and the ruin is spreading fast into the Colony. Perhaps for a year, while the properties whose owners are rich enough to restore them are being restored, there will be a fair amount of trade, and similarly while depleted stocks are being replenished, but when that is completed I fear there will be a deep and lasting depression. It stands to reason, on the face of things, that property cannot be destroyed systematically over a large area without long continued poverty following.

I am glad to be able to present this gentleman's opinions to readers of *The Iron Age*, particularly as they entirely coincide with the previous comments I have made upon the South African commercial situation.

Drought and Pumps.

Some time ago I mentioned in this letter that there was a growing demand in Palestine for more modern Pumps. I now learn that the rainfall last winter in Palestine was exceedingly scanty, in some districts amounting to less than half the annual average. This was especially the case in Jerusalem, which depends entirely on rain for its water supply. The municipality of Jerusalem recently appealed to the Sultan for a grant to enable the authorities to bring water through iron pipes into Jerusalem from the Pools of Solomon, about 4 miles distant, the old stone aqueduct built by King Solomon having fallen into ruin. The Sultan has issued orders authorizing the expenditure for this work to the extent of 6000 Turkish liras. So far back as 1866, Lady Burdett-Coutts offered at her own expense to bring water to Jerusalem from the springs of Ain-Arrub, situated midway between Jerusalem and Hebron, at a cost of \$300,000. As this lady would not trust the money in the hands of Turkish officials, the offer had to be declined. It seems to me that a progressive water engineer with a cheap and useful Pump might very well go to this historic district and drive a good business.

The Hardware Trade

My recent reports upon the Hardware trade in this country have been lugubrious to a degree. There is now, however, a slight revival in the Brass foundry branch, principally in Hearth Furniture, Curbs, Fire Brasses and Door and Window Fittings. General builders' brass foundry, however, continues to be as slack as previously reported. The Metallic Bedstead trade has been looking up slightly, but manufacturers complain of the increased severity of competition, due, of course, to the break down of the Bedstead Alliance, while the work people have at the present moment, which is regarded as unpropitious, asked for a rise in wages. Wrought Iron Hollow Ware goods are in brisk request, orders running largely upon Kettles, Buckets, Frying Pans, Coal Hods and Sanitary Fittings. Nails, both Cut and Wrought, are in poor demand, and what is done shows no profit. I understand that negotiations have been commenced among the Nail factories with a view to a trade combination for the prevention of underselling. It is stated that some 23 out of 28 firms in various parts of the country have expressed their willingness to join some such combination. A goodly number of orders have recently come in from abroad. Australia and New Zealand are buying Machinery and Fencing

Wire in increased quantities. In addition to India, Japan is buying moderately, and the trade with South America still continues exceptionally hopeful.

American Exhibition in London.

I understand that the directors of the Crystal Palace of London have decided to hold an American exhibition in 1902. They announce it as their intention to make it the largest and most important display of American commerce, industry and invention yet seen in England. In their prospectus, they state that it is believed that such an exhibition will, at the present time, be productive of the best results. It will not only promote the diffusion of a better knowledge of the great natural resources and products of the American continent, but it will also increase and cement the ties of mutual respect and friendship which happily prevail between ourselves and our kinsmen across the Atlantic.

TRADE IN SOUTH AFRICA.

FROM A SPECIAL CORRESPONDENT

There is no doubt that there will be an increasing trade for Hardware, American and other kinds, in South Africa generally, and there is no prejudice here against American goods. The people generally are very keen and will buy in the cheapest market, and, given a good agent, the American goods will stand an equal chance with those of any other country.

The only way to test the market thoroughly is to have samples, or, at all events, price-list catalogues, with very lowest prices, which should be accompanied by freight quotations, or preferably quotations c.i.f. Cape Town and Port Elizabeth.

REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

Geo. H. Oetzel, who has been identified for nearly 23 years as manager of the Hardware department of the A. H. Foster Company and their predecessors, A. H. Foster & Co., Foster, Wilkins & Co. and Foster & Wilkins, Union, S. C., will succeed to the Hardware business of that company about September 1. He will occupy three floors and will carry a full stock of Shelf and Builders' Hardware, Agricultural Implements, Stoves and Kitchen Furnishings, and also Paints, Oils and Varnishes. Mr. Oetzel will be pleased to receive catalogues, price-lists, &c., relating to the above lines.

Townley Metal Company, Kansas City, Mo., jobbers of Stamped, Japanned and Enameled Ware, Stove Hollow Ware, Tin Plate, &c., and manufacturers of Pieced Tinware, are expecting to add a full line of Hardware, Cutlery, &c., and will be glad to receive copies of catalogues, price-lists, &c., from manufacturers. Geo. E. Garland, formerly with the Turner Hardware Company, Muskogee, I. T., will act as buyer and manager of this department of the business.

On July 6 the entire business portion of Versailles, Ohio, was destroyed by fire. Among the stores burned out was the Hardware establishment of Manier & Pequignot, which firm have since been dissolved. The business will be continued by Joseph Manier, Jr., who will be pleased to receive catalogues and other matter pertaining to Hardware, Stoves, Tinware, Farming Implements, Bicycles, &c.

M. R. Mills & Co. are about to open in the Hardware and Agricultural Implement business at 1162 Harrison avenue, Columbus, Ohio, and will be pleased to have catalogues, quotations, &c., sent to them.

Weaver-Raymond Hardware Company's store in Springfield, Mo., was slightly damaged by fire and water a short time since. The loss has been satisfactorily adjusted. Business thus far in 1901 is referred to as surpassing that of any previous year for the same period.

SHOW WINDOW DISPLAY.

The trade are invited to contribute information in regard to methods which have proved satisfactory, with descriptions of attractive displays. Inquiries also are solicited, to which careful attention will be given.

SHOW WINDOW DISPLAY.

BY C. M. DOXSEE.

Twenty-five years ago Hardware merchants gave little attention to the arrangement of goods in the front windows of their stores. A collection of such articles as were handy was sufficient to inform the passers by that "this is a Hardware store," and as every one went to the Hardware store to get his "Hardware" very little else was necessary. Too many merchants to-day are trying to do business on 25 year old methods. Their sign "Hardware" is nailed over the door, their store windows indicate that they keep Hardware for sale, and they are content to passively wait for what trade may come their way.

The twentieth century way of doing business is one of activity and not passivity. The Hardware merchant encounters its "strenuous life" on every hand, and if he gains his share of success he must be diligent in wooing and winning the trade to his store.

ALWAYS BEFORE THE PUBLIC.

One of the best methods of doing this is through the front window, and the measure of success will depend upon the manner in which the window is used. The front window is a cheap advertising medium, and when properly used it brings greater returns for the expenditure than any other method. It is always an open book to the public. It always occupies a preferred position. From it the stranger gets his impression of the character of the store. It has its influence in drawing permanent customers or in repelling them.

MUST OBEY FUNDAMENTAL RULES.

The merchant, then, to get the most profit out of his window display should give it some intelligent thought and a little practical attention. In the matter of artistic and elaborate display the city merchant has a decided advantage over his country cousin. He has a larger stock from which to select his material, and has access to decorative helps about which the country merchant knows nothing. This need not, however, deter the country dealer from at least making an attempt to make his store window attractive to the public. He need not be a skillful decorator to produce a good window, any more than he need be a professional to write a good advertisement for the newspaper. A few fundamental rules he should keep in mind and follow in all of his window work.

CLEAN WINDOWS.

In the first place the front windows should be kept clean. The merchant who desires "to have and to hold" new customers is careful to greet them every day with a clean face. Why should he not do likewise with clean windows? Dirt in either case leaves the same impression. If he wishes his goods to be seen from the outside he must make it possible for people to see through his windows. Again, the merchant should keep in mind the idea of *oneness* in arranging his window. *One* kind of goods; *one* article; *one* class of articles; *one* price; *some one* thing that attracts the attention of even the most casual observer and makes an indelible impression upon his mind. In this respect many merchants fail. Their idea of window advertising is the same as newspaper advertising—i. e., that the space is practically wasted if they do not display a sample of nearly everything they keep for sale in the store at the same time. They might as well put their time to some other use. Only one result can possibly follow an arrangement of this kind. The one whose interest it is designed to arouse can have but a confused and indefinite idea of what was displayed.

The writer has seen the effect of many an otherwise attractive window largely diminished by crowding in a great many articles entirely distinct from the chief display. Let the least observant man while in the coun-

try see a flock of crows or geese, and nine chances out of ten he can tell when he returns home what he saw. Let the same man see a flock of a half a dozen or a dozen different kinds of birds, and nine chances out of ten a half hour after he cannot tell the name of one, or not more than one, bird that he saw. The different kinds of birds, taken collectively, confuse the mind of the casual observer, and it is the casual observer whose attention the dealer wishes to attract. A display should be so simple, although it may be elaborately wrought out, that even "he who runs may read."

FREQUENT CHANGES.

A window advertisement, like a newspaper advertisement, should be changed frequently. In a country town, where a large part of the customers are farmers and who do not get to town very often, possibly two weeks may not be too long to allow a display to stand. It should, however, be changed before "familiarity breeds contempt," or becomes unsightly through the accumulation of dust. It is the frequent change that creates and holds the interest of the people and makes them think about you and talk about your store.

ATTACH PRICE CARDS.

When practicable a price should be attached to the articles exhibited. If the people are interested in the goods displayed, they are more interested in the prices. Some merchants object to advertising the prices of their goods for fear their competitors may use them to their disadvantage. Any merchant who has so little business that he is always "nosing" around to find out what his competitors' prices are, that he may offer the same article at a little less price, as a general rule cuts a sorry figure as a competitor, and what little business he may secure through this means is gained at such a cost in loss of reasonable profits that unless he be a consummate fool he will readily see that such a plan is neither wise nor prudent.

Prices make the window display doubly effective. Many times people will stop and examine priced goods, when they would not otherwise give them passing attention. The real competitor of the Hardware merchant is the mail order catalogue, and what would these catalogues be worth were the prices left out? In looking over the advertisements in the city papers, it is the price that attracts the attention as much as the description or picture of the article.

THE FOUR RULES.

Sales that are directly traceable to the window display in the majority of cases, I venture to say, are made because of the price attached to the goods. These four fundamental rules, then, should be observed to make the window display most effective:

1. Clean window.
2. Unity of display.
3. Frequent changes.
4. Price cards.

There is no retail store, millinery excepted, that affords to the ladies the material for such attractive displays as the Hardware. There are scores of useful and profitable articles in every store that will be bought if seen. Women like to see the new and useful devices for the kitchen, and the store window is the proper place to bring these goods to their attention.

CONSTRUCTION OF WINDOW.

That a window may be available at all seasons of the year, free from flies in summer and frost in winter, it should be boxed up. About half way up from the floor of the window to the ceiling, and 3 or 4 feet back from the window, may be built a background made of matched ceiling lumber. Above this to the ceiling glazed sash may be placed so as to admit the light into the store from the upper part of the window. A door should be placed in this background large enough to allow easy passage, and through which articles for display may be taken.

If a merchant does not care to go to this expense he can put the ceiling half way up and stretch cheese cloth over the top, which answers the purpose quite as well. An arrangement of this kind gives the merchant

not only the floor of his window, but the back, which is the more readily observed, for display, and affords an opportunity for a more elaborate and attractive display of his wares.

SOME EXAMPLES OF DISPLAY.

NICKEL GOODS always make a good appearance, whether exhibited as a class or as individual articles. They appear to the best advantage when placed against a black background. A good way is to place in the window a few small boxes, not so many that they seem crowded. Cover these over with black calico, letting the folds drop loosely between these boxes. Then place a single article, a Tea Pot, Coffee Pot or whatever it may be, upon each box, and no more. On the background form the words "NICKEL GOODS," made from round pieces of bright tin cut out with a $\frac{3}{4}$ -inch tinner's hollow punch. Place a card in the window with some suitable text, and people will stop and look at your display and talk about it whether they buy goods or not.

CUTLERY can always be arranged to attract attention. It looks well on either a white or red background, and admits of many ways of arrangement. It is best to make a separate display for Pocket Knives, Razors, Table Cutlery and Shears with appropriate window cards and prices. "Our Knives Cut," "No Pull Here," "The Best Made" and "Every Pair Warranted" are suggestions.

PAINT.—A merchant who sells Paint can arrange a window that will make people stop and look by papering his window in imitation of a room. Hang on the walls two or three interesting pictures, whose frames have been repainted with special Enamels or Gilding. Place in the window a few old articles that have been retouched with special Paints, placing near little groups of cans of these special Paints, with a window card reading:

.....
: Old Things Made New :
: with :
: B. O. E. PAINTS. :
:
:

SPECIAL AND SEASONABLE DISPLAYS are always interesting. If the dealer is handy with the drawing pencil let him draw with charcoal a fishing scene on the background. Arrange a dummy in the foreground represented as sitting on the bank fishing. A string of two or three "bullheads" by his side will give it a touch of naturalness. With Fishing Tackle arranged in the front of the window, with prices attached, the merchant need not worry about the sales.

A **CLEVER DISPLAY** which attracted attention was shown in a Hardware window upon the occasion of a meeting of the country editors. On the black background was outlined with tinned carpet tacks driven into the boards two figures sitting on a box. A male figure had his arm around the waist of a female figure, and underneath were the words, "Welcome the Country Press." A huge pen and a pair of shears made from tin were suspended, one on either side. Various Handles represented the clubbing list, a Pump was the city reporter, Revolvers and Knives were for the fighting editor, Carpenters' Adze represented new ads, &c.

NATURALNESS.

In making a display of certain goods naturalness adds much to the attractiveness of the exhibit. If it is a Hard Coal Stove, carpet the display floor or cover it with a sample of your Oil Cloth Matting, set up the Stove with a Stove Board under it, use the best Russia Pipe and place a red light inside at night to give the appearance of fire. Fix up a female dummy sitting in a rocking chair, with her stocking feet upon the footrest, with a card reading, "Her feet are always warm at night. A 'Cheerful Home' Heater in your house will do the business." People will crowd each other to see.

STRIKING DISPLAYS.

Any display in motion is always interesting. Such an unattractive thing as a Barrel Churn would receive

scarcely a passing notice, but give it some hidden motive power and people would go out of their way to see it. Any novelty display should not remain long in the window, unless it be exceptionally clever. People soon tire of it, and something new should be presented to maintain their interest.

Striking displays will always keep a crowd in front of the window, and, while sales may not be the direct result, they will bring a store prominently before the people, which cannot help but repay one for the time and trouble expended. These should only be occasional, as the best immediate results always come from exhibiting specific articles with their prices.

SOME BRIEF SUGGESTIONS.

Place a Steel Range in the window, build a charcoal fire, and get a neatly dressed woman to bake biscuits or cookies.

Exhibit a Gasoline or Oil Stove in operation, with a tea kettle of water boiling. Have a pan of nicely browned biscuits partially drawn out of oven, with card bearing "Baked in ten minutes," or whatever the time may actually be, "on our Sweatless Oil Stove."

Cover the floor of display window with green sod. Fix up a dummy pushing a Lawn Mower. Have a card reading "A good ante-breakfast exercise." Price \$3 and up."

Make a large firecracker of Stove Pipe covered with red tissue paper, using $\frac{3}{4}$ -inch Manila Rope for fuse. Place in center of display of goods with prices. Have card reading "Sure to go at these 'hot' prices."

Place kitchen table in the window, have floor filled with miscellaneous articles of Granite Ware. Have dummy dressed in cook's costume behind table in act of canning fruit. Have on window card, "Do you use 'Everlasting' Granite Ware? Particular housekeepers do."

TRADE ITEMS.

BEALL BROS., Alton, Ill., shipped their first carload of Shovels from their new Shovel factory last week. This factory is now in full running order, and regular shipments will be made from this time forth. The new Shovel factory, added to their already large works producing Miners' Tools and Supplies, makes the establishment of Beall Bros. the second largest manufacturing enterprise in Alton.

ARTHUR F. RYDER, who has for some years been manager of the claim department of Hibbard, Spencer, Bartlett & Co., Chicago, has severed his connection with that house, after a total service of nearly 20 years, and will enter the St. Louis Hardware market in the employ of the Simmons Hardware Company. He began his new duties on the 1st inst. Before his departure from Chicago he was the recipient of a very handsome thirty-second degree Masonic charm, which was presented him by the many friends associated with him in the employment of Hibbard, Spencer, Bartlett & Co.

THE SIMONDS MFG. COMPANY, Fitchburg, Mass., have sent us a photograph of the trunk of the McKinley tree, with a Simonds Cross Cut Saw to the foreground, a framed copy of which is hanging in the Executive Mansion at Washington. This tree was cut to procure its huge stump, as a platform, from which President McKinley was to have addressed the people at Chehalis, Wash., May 23 last, if his trip had extended so far. Its height was 300 feet, circumference 8 feet from the ground 28 feet, and estimated age 600 years. The tree contained 30,000 feet of lumber.

JOHN A. ROEBLING'S SONS COMPANY, Trenton, N. J., have purchased the entire Wrench business of the American Saw Company of that city, and will continue to make the genuine Alligator and Triumph Wrenches. Alder & Boyd, 37 Warren street, will continue as New York and export agents for the goods.

SMITH & HEMENWAY COMPANY, 296 Broadway, New York, advise us that while they are just now unable to supply copies of their "Green Book of Hardware Specialties," for which there has been an unexpectedly large demand, they are working on a new and larger edition, which will be ready in a short time. They will then be prepared to supply the books to all who may desire them.

AMONG THE HARDWARE TRADE.

J. L. Browne, Indianola, Iowa, has disposed of his stock of Hardware, Stoves, Tinware, Farm Implements, Sporting Goods, Wagons, Buggies, &c., to McCoy Sons & Pollock. The new proprietors have enlarged the stock formerly carried and increased the capacity of their tin shop.

Jno. H. Bond, Jr., has bought Jno. H. Bryant's half interest in the Bryant & Bond Company, Cameron, Texas, a corporation with a capital stock of \$35,000, Mr. Bryant retiring. The business will be continued as heretofore under the same name, with the following officers: Jno. H. Bond, Jr., president; E. Sanders, vice-president and general manager; M. S. Bond, secretary and treasurer; William Clifton being manager of the furniture department. The three latter have long been connected with the business and have been allowed to acquire some of the stock. At the annual meeting of the new directors a report was made showing that the past year had been a prosperous one for the company. The concern handle Hardware, Stoves, Tinware, Crockery, Buggies and Wagons, Agricultural Implements, Furniture, &c.

M. F. Arnall has sold his Hardware business in Elk Falls, Kan., to Williams & Root, who continue at the old stand.

The Hunter-Harris Company, Rising Sun, Ind., have disposed of the grocery part of their business and will hereafter devote their exclusive attention to the sale of Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements and Sporting Goods.

Litchfield & Cole are successors to Litchfield & Frazer in the Hardware, Stove, Wagon and Buggy business in Lone Oak, Texas.

Fox Bros., Pine Bluff, Ark., whose business was established in 1882, have incorporated under the style of Fox Bros. Hardware Company, the capital stock being \$100,000. The personnel of the concern continues unchanged. They do a wholesale and retail business in Shelf and Heavy Hardware, Tinware, Agricultural Implements, Stoves, Sporting and Athletic Goods, &c.

F. W. Cole, Ethan, S. D., has admitted a partner in his Hardware and Stove business, and the style is now Cole & Buckles. The firm are erecting an addition to their main building and will devote it to tin shop purposes.

Atkinson Hardware Company, wholesale Hardware, Stoves, Tinware, Farm Implements, Wagons and Buggies, Fort Smith, Ark., have been succeeded by Atkinson-Williams Hardware Company, who will continue at the old stand. The company report that the year closing June 1 showed the largest business in the history of their house, and with additional storage room and better facilities for handling goods they contemplate a marked gain for the present year on the one just ended.

Geo. A. Hawley has lately engaged in business in Sterling, Kan., handling Shelf Hardware, Tinware, Sporting Goods, &c.

D. H. Stinson has removed his Hardware and Stove business from Battle Creek, Mich., to Kendallville, Ind., where he is occupying a new building built especially for him. Mr. Stinson has added Buggies and Farm Implements, and is devoting the second floor of his establishment, 100 x 22 feet, to his stock of the former.

CONTENTS

	PAGE.
New Foundry of the E. W. Bliss Company. Illustrated.....	1
The Ridgway Dynamo & Engine Company.....	2
A Conference on the Federal Bankruptcy Law.....	3
The Philippine Tariff.....	5
The Canadian Niagara Power Company.....	5
A Large Order for Pneumatic Tools.....	5
The Design of Angle Rolls.—I. Illustrated.....	6
The Dithridge Steel Car Company.....	9
The Production of the Cuban Iron Ore Mines.....	10
Gas and Oil Fields of the West and Southwest.....	10
The McHenry Involute Track Level. Illustrated.....	11
United States Trade with Germany.....	11
The Largest Ocean Liner.....	11
Some Notes of Travel.....	12
The Schwartz Melting and Refining Furnace. Illustrated.....	13
Pacific Coast News.....	14
Tate, Jones & Co., Incorporated.....	14
Lake Iron Ore Matters.....	15
Canadian News.....	15
The World's Coal Production.....	16
Editorials:	
Our Exports of Iron and Machinery.....	17
A Lake Shipbuilding Proposition.....	17
A Machine Shop Experience.....	18
Correspondence.....	18
Personal.....	19
The Strike in the Sheet, Bar and Hoop Mills.....	20
Obituary. Portrait.....	23
Manufacturing:	
Iron and Steel.....	24
General Machinery.....	24
Engines and Boilers.....	25
Buildings and Bridges.....	25
Foundries.....	25
Hardware.....	26
Miscellaneous.....	26
Tuscora Steel Company.....	26
The Iron and Metal Trades:	
A Comparison of Prices.....	27
Chicago.....	27
Philadelphia.....	29
Cleveland.....	29
Cincinnati.....	30
Birmingham.....	30
Pittsburgh.....	31
German Iron Market.....	32
New York.....	33
Metal Market.....	33
The Molders' Strike.....	33
Iron and Industrial Stocks.....	34
The New York Machinery Market.....	35
Pittsburgh of the Future.—II.....	36
On the Effects of Repeated Strains in Structures, as Exemplified in the Brooklyn Bridge Fractures.....	38
Hardware:	
Condition of Trade.....	39
Notes on Prices.....	40
Kitselman Bros.' New Plant.....	41
Supplee Hardware Company's New Catalogue.....	41
Lombard & Co.'s New Catalogue.....	41
A Request.....	41
Notes on Foreign Trade.....	42
Requests for Catalogues, &c.....	43
Show Window Display. Illustrated.....	44
Trade Items.....	45
Among the Hardware Trade.....	46
Nicholson File Company.....	47
Price-Lists, Circulars, &c.....	47
Hammers and Sledges.....	47
Marble Handy Compass. Illustrated.....	47
A New Milbradt Rolling Step Ladder. Illustrated.....	47
Emmert's Universal Vise. Illustrated.....	48
Improved Carpenter's Clamp. Illustrated.....	48
The Stengel Double Roller Caster. Illustrated.....	49
Hall's Combination Knife. Illustrated.....	49
Simplex Car and Track Jacks. Illustrated.....	49
Hibbard's Improved Adjustable Hollow Auger. Illustrated.....	50
Remington No. 6 Take Down Rifle. Illustrated.....	50
American Double Hollow Ground Razor. Illustrated.....	50
Current Hardware Prices.....	51
Current Metal Prices.....	56

NICHOLSON FILE COMPANY.

NICHOLSON FILE COMPANY, Providence R. I., announce under date 1st inst. that they have purchased of the J. Barton Smith Company, Philadelphia, the File and Rasp manufacturing business heretofore carried on by them, including all of the machinery, tools, stock of goods, patents and good will. Payment should be made to the J. Barton Smith Company for all charges by them prior to August 1. Remittances for all bills of Files and Rasps rendered on and after that date, as well as all orders, should be sent direct to the Nicholson File Company at Providence, R. I. The Nicholson Company solicit the continued patronage of all those who have handled the File and Rasp products of the J. Barton Smith Company, assuring them that the quality of these goods will be maintained in every particular, and that their business will receive prompt and careful attention. By this purchase the Nicholson File Company have increased the number of their regular brands of Files and Rasps to nine, while they have also increased their facilities for manufacturing.

PRICE-LISTS, CIRCULARS, &c.

KILBOURNE & JACOBS MFG. COMPANY, Columbus, Ohio: General catalogue No. 33, 84 pages, relating to Drag and Wheel Road Scrapers, Bolted Wheelbarrows of all kinds, Contractors' Railroad and Grading Plows, Tubular Steel Dirt, Mining, Foundry, Coal and Coke Barrows, Contractors' Railroad and Farm Dump Carts, Wrought Steel Sinks, Pressed Steel Shop Pans, &c. They call special attention to the many additions to and improvements in former lines since the issue of their last catalogue. They also issue catalogue No. 7, 128 pages, relating to Trucks, including Baggage Barrows, Depot Express Wagons, Push Carts, &c., and catalogue No. 31, 72 pages, relating to small Cars of all kinds, Contractors' Dump Cars, Steel Ore and Mine Cars, &c.

THE UNITED STATES WIRE MAT COMPANY, Decatur, Ill.: Illustrated pamphlet, entitled "Modern Mats." The Mats made by the company are described and the special features of value possessed by them are fully set forth. The company have been very successful in securing a large trade for their Mats.

THE ST. LOUIS AIR RIFLE COMPANY, St. Louis, Mo.: Catalogue of the St. Louis Air Rifle. This catalogue gives illustrations and descriptions of the four different models of Air Rifles made by the company, and also contains interesting information relative to Air Guns generally.

WINONA WAGON COMPANY, Winona, Minn.: An attractive catalogue and price-list devoted to the Rushford and Winona Wagons, with iron clad hubs and outer bearing axles.

THE NEWARK MEAT TENDERING COMPANY, Newark, Ohio: Catalogue illustrating and describing the Snelling Roller Steak Hacker, a machine for tendering steaks. It is made in three sizes: No. 8, for butchers; No. 6, for hotels and restaurants, and No. 3, for families.

THE ERICSSON TELEPHONE COMPANY, 296 Broadway, New York: The company are issuing a series of cards in which the merits of their Telephones are tersely set forth. The cards are attractively gotten up and admirably serve the purpose for which they are intended.

Hammers and Sledges.

Hubbard & Co., Pittsburgh, Pa., have recently added the regular line of heavy hammers and sledges, and are now manufacturing these goods in connection with their former lines.

An amendment has been made to the articles of incorporation of the Lang Cutlery Works of Cedar Rapids, Iowa. The amendment changes the name to the Iowa Cutlery Works, of which Z. L. Brewer is president and R. A. Kurtz is secretary and treasurer. They manufacture a strictly high grade line of Steel Laid Shears of all kinds and refer to their business as constantly increasing.

Marble Handy Compass.

Marble Safety Axe Company, Gladstone, Mich., have just put on the market in addition to an already well established line of sportsmen's specialties the Marble Handy Compass, two styles of which are here illustrated. Fig. 1 shows it with a stationary dial. Fig. 2 indicates a style similar to a marine compass, with a card which revolves with the needle, this form being a convenience to inexperienced users. The compasses are $2\frac{3}{4}$ inches long over all, and $1\frac{1}{8}$ inches across the face. The purpose of this device is to provide a compass for use in the woods or on hunting or fishing trips of any kind where a compass is needed. It has a double safety pin for fastening it securely to the coat, vest or belt of

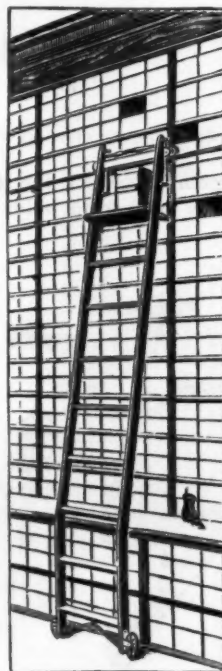


Fig. 1.—Marble Handy Compass, Stationary Dial. Fig. 2.—Compass with Revolving Dial.

the individual, for instant use and for frequent consultation. It has a box for the needle and dial $\frac{1}{2}$ -inch deep, which is made water tight and moisture proof by means of a disk of glass and a rubber gasket. The top can be removed for adjustment if necessary. The compass is made in several styles, with plain needle without jeweled cap, with jewel capped needle, without revolving card dial, and complete with jewel capped needle and revolving dial. They are also made without the bracket for fastening in the several styles mentioned, thus giving a water proof compass $1\frac{1}{8} \times \frac{1}{2}$ inches, at a less price than the goods here illustrated.

A New Milbradt Rolling Step Ladder.

The accompanying cut illustrates a rolling step ladder brought out by G. A. Milbradt & Co., St. Louis, Mo.



A New Milbradt Rolling Step Ladder.

Wheels rolling on a hard wood track are attached to the top of the ladder, the wheels being arranged to slide up and down, so as to allow the ladder to adjust itself to any unevenness of the floor, and also to permit the lower

end of the ladder to be set in close to the shelving out of the way when not in use. The track is screwed to the edge of the shelf, even with the top, so as not to block up any space. The track is simply to guide the ladder. Wheels rolling on the floor are attached at the lower end of the ladder, but no track is used there. It is explained that the ladder is especially adapted to shelving not strongly built, as the entire weight of the ladder and of the operator rests on the floor; also that the ladder runs satisfactorily on a sloping floor.

Emmert's Universal Vise.

The accompanying cuts show some of the positions in which the Emmert's Universal vise can be used. It

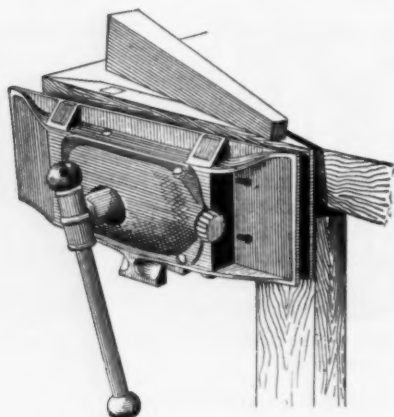


Fig. 1.—Emmert's Universal Vise.

is referred to as many vises in one combination. There are 30 fixed positions to the vise, and it can also be

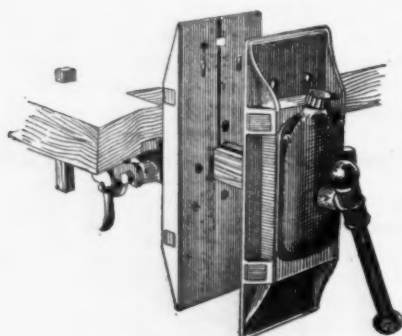


Fig. 2.—Emmert Vises Reversed.

stopped at any point between the fixed positions at which the mechanic wishes to hold his work. It can

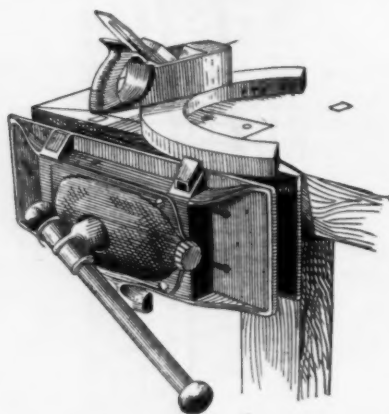


Fig. 3.—Auxiliary Jaws Holding Circular Work.

reach any point in the arc of a circle, and can be raised or lowered to suit the convenience and will of the mechanic. The jaws are both right and left and measure

9 x 18 x 1/2 inches. In Fig. 1 the vise is shown in its normal position on a bench, with the jaw at an angle for tapering work. In Fig. 2 the vise is reversed to hold work above the bench. One pair of the small auxiliary jaws are shown in Fig. 3 holding circular work, and in

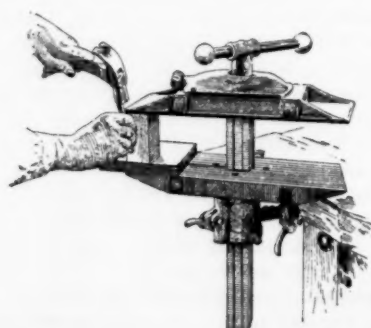


Fig. 4.—Holding Two Pieces in Position.

Fig. 4 two pieces are being held in position to be fastened together. It is explained that when work is once gripped, it is not necessary to loosen it, but that the vise and work together are swung into various convenient positions until all of a series of operations have been completed. The vise is manufactured by the Emmert Mfg. Company, Waynesboro, Pa.

Improved Carpenters' Clamp.

The American Carpenter Clamp Company, Cleveland, Ohio, are putting on the market the clamp shown herewith. A pair of nearly vertical complementary jaws are mounted on folding brackets. An article, as a door,

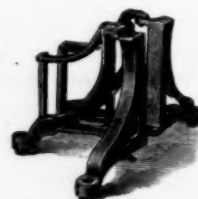


Fig. 1.—Improved Carpenters' Clamp.

&c., bearing on a steel spring connecting the under side of the brackets, causes the jaws to automatically lock the article rigidly. The clamp is provided with rubber tips or feet, and the weight of the article held, it is explained, prevents the clamp slipping on the floor. The



Fig. 2.—Carpenters' Clamp in Use.

design of the improvement is to provide a light clamp to hold a door, sash, blind or similar object firmly and to avoid the use of trestles; also to prevent scratching the door. The clamp is constructed so as to fold, and its lightness, it is remarked, makes it convenient to carry.

The Stengel Double Roller Caster.

The Stengel Mfg. Company, Hamilton, Ohio, are putting on the market the casters shown herewith. The upper bearing on the stem consists of a rolling box containing eight steel anti-friction rolls, which are arranged, it is explained, so that the wear is distributed instead of occurring in one place. The anti-friction provision of the stem accomplishes a double result, it is shown, permitting the swiveling to take place with the utmost



The Stengel Double Roller Casters.

ease, and at the same time allows the oscillation of the housing similar freedom. The oscillation is so easy, it is stated, that both floor wheels always bear on the floor, permitting them to roll on the carpet, instead of pivoting on the carpet and wearing it.

Hall's Combination Knife.

Hall's Specialty & Mfg. Company, 50 to 58 Columbia street, Newark, N. J., are offering the combination knife



Fig. 1.—Hall's Combination Knife.

shown in the accompanying cuts. It combines a knife, screw driver, nail file, bradawl and nipple wrench. The blades and handles are all of steel, and are all warranted.

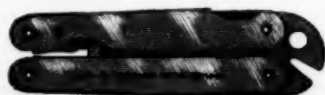


Fig. 2.—Combination Knife Closed.

The knife blade is made of razor steel. The knife is designed to retail at 25 cents.

Simplex Car and Track Jacks.

A. M. Crane & Co., The Rookery, Chicago, are sole manufacturers of the Simplex car and track jacks herewith illustrated. Fig. 1 shows the car jack and Fig. 2 the track jack. The mechanism of the jacks is stated by the manufacturers to represent the most modern ideas in jack construction, having great lifting power combined with simplicity in the working parts. The material used is from the specifications of theoretical and practical engineers, which, combined with full details of strain upon the castings, have produced a jack

which, it is stated, is many pounds lighter than others having the same lifting capacity.

The prominent features of the track jack are its weight, which is but 45 pounds, and the novel arrangement by which it can be tripped—namely, by pulling the chain. The working parts are all drop forgings and the



Fig. 1.—Simplex Car Jack.

number of pieces reduced to a minimum, being only 8. It has a locking device whereby the pawls must be forced in place in order to allow the operation of lifting. It lifts 10 tons 15 inches. The car jack has practically the same features, as regards fewness of pieces, as the track jack. It also possesses the advantage of the pawls interlocking to permit of operating. The two pawls are interchangeable, allowing the top or lifting pawl, it is explained, after two or three years' wear to be changed in position to that of the retaining pawl and the retaining pawl taking its place, thus insuring for years the working parts of the jack without renewal. The lever socket is cored through to the lever pin, which



Fig. 2.—Simplex Track Jack.

is kept lubricated by pouring oil in the socket and packing with waste, doing away with the necessity of oiling often. The brass button indicator on the side is used to prevent the parts from rusting when standing out in the rain, thus insuring a jack ready for use at all times. This jack lifts or lowers by turning the indicator. Its weight is 75 pounds, and it will lift 15 tons 17 inches. Both styles of jacks have a malleable iron

standard, steel lever, steel socket and rack bar, forged pawls and tool steel pins. They both lift $\frac{1}{2}$ inch at half the stroke of the lever, or two $\frac{1}{2}$ -inch teeth at full stroke.

Hibbard's Improved Adjustable Hollow Auger.

C. B. Hibbard Mfg. Company, Grand Rapids, Mich., are offering the hollow auger herewith illustrated. It is provided with pivoted steel jaws, and cuts tenents from $\frac{1}{4}$ to $1\frac{1}{4}$ inches. To adjust the auger the steel nut is loosened and the thumb gear turned, which brings the center of the jaws in line with the center of the



Hibbard's Improved Adjustable Hollow Auger.

shank. The wearing parts of the tool are of best quality steel, and the auger is furnished with a graduated scale, best quality steel knives, steel cap and shank and movable malleable iron stop. The tool is referred to as a smooth and rapid tenent cutter.

Remington No. 6 Take Down Rifle.

Remington Arms Company, Ilion, N. Y., for whom M. Hartley Company, 313-315 Broadway, New York, are agents, have just put on the market the Remington No. 6 Take Down rifle, as here illustrated. It is a new model and single shot, especially designed for those wanting a light and reliable take down rifle of standard make at a moderate price. It is made from special decarbonized barrel steel and rifled in first-class manner. The barrel is round, gracefully tapered from breech to muzzle, and finely finished and browned. Butt and tip stock are made from first quality, second growth black walnut, thoroughly seasoned, carefully hand fitted and handsomely finished, the butt stock being fitted with a rifle butt plate, nicely finished and blued. The



New Remington No. 6 Take Down Rifle.

rifle has a strong and artistically modeled frame, which, as well as the guard breech block and hammer, is well finished, polished and case hardened, the block being arranged with shoulders on the sides to prevent the possibility of an escape of gas backward. The action is of the well known Remington pattern, constructed so that when the piece is half cocked in opening the breech, the hammer is lifted from the trigger or sear, thereby preventing a premature discharge of the arm in closing the

breech, if the trigger should be accidentally pulled in loading the piece. The barrel is easily removed by loosening the thumb screw which is retained in the frame, obviating the possibility of its being lost. Each rifle is packed, taken down, in a neat bristol board box. The caliber is 0.22, barrel 20 inches, and weight about $3\frac{1}{2}$ pounds.

American Double Hollow Ground Razors.

The Geo. W. Korn Razor Mfg. Company, Little Valley, N. Y., have begun the manufacture of razors ground by a patented process, by means of which the blade is hollow ground, or concaved in the usual way, and also concaved on the edge, so that the razor can be more readily honed and stropped, as will be seen by reference to Fig. 3 of the sketches herewith, in which, it will be observed, the peculiarities of the various razors are somewhat exaggerated. Up to about 30 years ago the English led in the making of a good razor, and grinding it properly, with the Germans their closest competitors. The fine razors were hollow ground with very thin blades. It was found that the thin edge on English razors of high grade, indicated in Fig. 1, vibrated too much, so a ridge or wall about one-third back of the cutting edge was introduced to strengthen it, and prevent vibration, the principle of which is illustrated in Fig. 2. The disadvantage of this method, however, developed the fact that if the ridge or wall was not drawn very thin and the cutting edge tapered sufficiently, after a few honings the edge would not strike the hone. It was for this reason that experimentation was begun with a view



Fig. 1.—Hollow Ground Thin Edge Razor. Fig. 2.—Hollow Ground with Ridge or Wall. Fig. 3.—American Double Hollow Ground Blade.

to hollowing out or concaving the edge side of the ridge, the effect of which is sketched in Fig. 3, thus making two distinct concaves in the blade. This feature of the grinding is clearly shown by laying a straight edge at right angles with the blade, from ridge to cutting edge. The point is made by the manufacturers that a razor so made necessarily has more elasticity than either the English or German razors, and that an eighth of an inch can be honed off a five-eighths razor and still be able to shave with it. This style of blade will be called the American Double Hollow Ground. In producing razors thus ground the company use special razor grinding machines patented by the Wilkinson Sword Company, London, England, and of which the Korn Company have the en-

tire control. The razor will be made regularly in a certain jet black handle to distinguish it, but the blades will also be assembled in any handles specially ordered. This company will also make all kinds of razors in Hamburg grinding, but it is not their intention to manufacture the cheaper grades at present. The company have a new and commodious brick building with facilities for producing 100 dozens a day, but are using only half of the capacity at present.

Current Hardware Prices.

REVISED AUGUST 6, 1901.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated represent those current in the market as obtainable by the fair retail hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33½@33½&10% signifies that the price of the goods in question ranges from 33½ per cent. discount to 33½ and 10 per cent. discount.

Adjusters Blind—

Domestic, # doz. \$3.00... 33½@33½&10%
North's... 33½@33½&10%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent... 25&5%
Taplin's Perfection... 50%

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils—American—

Eagle Anvil... 7½@7½%
Hay-Budden, Wrought... 9½@9½%
Horseshoe brand, Wrought... 9½@9½%
Samson... 7½@7½%
Trenton, Wrought... 8½@8½%

Imported—

Peter Wright's... 9½@9½%

Anvil, Vise and Drill—

Millers Falls Co., \$15.00... 20%

Apple Parers—See Parers, Apple, &c.

Aprons, Blacksmiths'—

Hull Bros. Co.:
Lots of 1 doz... 25%
Smaller lots... 20%
Lots of 3 doz... 30%

Augers and Bits—

Com. Double Spur... 70@70%
Boring Machine Augers... 60@60&10%

Car Bits, 12-in. twist... 60@60&10%

Jennings' Pattern Auger Bits... 60@60&10%

Ford's Auger and Car Bits... 40@40&10%

Forster Pat. Auger Bits... 20%

C. E. Jennings & Co.:
No. 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100... 40%

No. 10, R. Jennings' List... 50%

Russell Jennings' Bits... 25&10&25%

L'Hommedieu Car Bits 15@10&15&10&25%

Mayhew's Countersink Bits... 45%

Pugh's Black... 20%

Pugh's Jennings' Pattern... 35%

Snell's Auger Bits... 60%

Snell's Belt Hangers' Bits... 50&10%

Snell's Car Bits, 12-in. twist... 60%

Wright's Jennings Bits (R. Jennings' List)... 50%

Bit Stock Drills—

Standard List... 66@66&5%

Expansive Bits—

Clark's small, #18; large, #28... 50&10%

Lavigne's Clark's Pattern, No. 1, #28... 50&10%

C. E. Jennings & Co., Steer's Pat... 33½&10%

Swan's... 60%

Gimlet Bits—

Common Double Cut, gro. \$2.25@2.75

German Pattern... gro. \$3.25@4.50

Hollow Augers—

Bonney Pattern, per doz. \$11.00@11.50

Ames... 25&10%

New Patent... 25&10%

Universal... 20%

Wood's Universal... 25%

Ship Augers and Bits—

Ford's... 40%

Snell's... 40%

C. E. Jennings & Co.:
L'Hommedieu's... 15&10%

Watrous'... 40%

Awl Hafts, See Hafts, Awl.

Awls—

Handled... gro. \$2.75@3.10

Unhandled, Shouldered, gro. 65@65%

Unhandled, Patent... gro. 60@60%

Pay Awls:
Unhandled, Patent... gro. 31@31%

Unhandled, Shouldered, gro. 65@65%

Scratch Awls:
Handled, Common... gro. \$3.50@4.00

Handled, Socket... gro. \$11.50@12.00

Awl and Tool Sets—See Sets, Awl and Tool.

Axles—

Concord, Loose Collar... 4½@5c

Concord, Solid Collar... 4½@5c

No. 1 Common... 3½@4c

No. 1 & Com. New Style... 3½@4c

No. 2 Solid Collar... 4½@5c

Nos. 11 to 14... 70@70&10%

Nos. 15 to 18... 75@75&10%

Nos. 19 to 22... 75@75&10%

Common and Concord, not turned... 1b. 4½@5c

Common and Concord, turned... 1b. 4½@5c

Half Patent... 1b. 4½@5c

Caldwell new list... 50%

Pullman's... 80%

Spring—

Spring Balances... 60&10@50&10&5%

Chatillon's:
Light Sog. Balances... 40&10%

Straight Balances... 40%

Circular Balances... 50%

Large Dial... 40%

Pelouse... 50%

Barb Wire—See Wire, Barb.

Bars—Crow—

Steel Crowbars, 10 to 40 lb., per lb. 2 90@3.10

Beams, Scale—

Scale Beams, List Jan. 12, '98, 50&10%

Chatillon's No. 1... 30%

Chatillon's No. 2... 40%

Beaters—Egg—

Standard Co.:
No. 5 Steel Handle Diver, # gro. \$6.50

No. 10 Cast Handle Diver, # gro. \$8.00

No. 10 St-el Handle Diver, # gro. \$8.00

No. 15 Extra Heavy Steel Handle, # gro. \$15.00

Rival, # gro. \$11.00

Taplin & Co.:
No. 50 Small Family size... \$5.00

No. 100 Regular Family size... \$5.00

No. 102 Regular Family size, tinned... \$5.00

No. 150 Large Family size... \$9.50

No. 152 Large Family size, tinned... \$9.50

Lyons' Standard size... # doz. \$1.75

Wonder (S. S. & Co.)... # gro. \$7.50

Bellows—

Blacksmith, Standard List, 70@70&10%

C. E. Jennings & Co., Blacksmith... 60&10%

C. E. Jennings & Co., Hand... 33½&10%

Blacksmiths—

Inch... 30 32 34 36 38 40

Each... \$3.50 3.75 4.25 4.80 5.35 6.15

Extra Length:
Each... \$4.00 4.55 5.10 5.60 6.10 7.50

Molders—

Inch... 9 10 11 12 14 16

Doz... \$6.75 7.25 8.50 9.50 12.00 14.50

Hand—

Inch... 6 7 8 9 10 12

Doz... \$3.75 4.25 4.50 5.00 5.7 6.75

Bells—Cow—

Ordinary goods... 75&5@75&10%

High grade... 70@70&10%

Jersey... 75&10%

Texas Star... 50%

Door—

Abbe's Gong... 45%

Barton Gong... 50%

Home, R. & E. Mfg. Co.'s... 55&10%

Lever and Pull, Sargent &... 40&10%

Yankee Gong... 50%

Hand—

Hand Bells, Polished... 60&5@60&5%

White Metal... 55&55&10%

Nickel Plated... 50@50&10%

Swiss... 60@60&10%

Silver Chrome... 30&30&10%

Miscellaneous—

Farm Bells... 1b. 2@2&40

Steel Alloy Church and School... 50&10&50%

National Bell Foundry Co.:
Superior Cast Steel Church and School Bells... 50&10&50%

Wilmut & Hobbs Mfg. Co., Gongs... 70%

Belting—Rubber—

Agricultural (Low Grade)... 75&10@80%

Common Standard... 75@75&10%

Standard... 70@70&10%

Extra... 60@60&10%

High Grade... 50&10@50&10&5%

Boston Belting Co.:
Seamless Stretched, Imperial... 45&5%

Boston... 30&30%

Niagara... 60&5%

Leather—

Extra Heavy, Short Lap... 50&10@60%

Cut Prices.—In the present condition of the market there is a good deal of cutting of prices by the jobbing trade, whose quotations are often lower than those of the manufacturers.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (May 3 1900), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Regular Short Lap 60&10@60&10&5%

Standard... 60&10&10@70&5%

Light Standard... 70@70&10%

Cotton—

Rosendale-Reddaway B. & H. Co.:
Sphinx Brand... 60&10%

Durable Brand... 70%

Bench Stops—See Stops, Bench

Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters... 20%

Stoddard's Lightning Tire Upsetters... 40@50%

Bicycle Goods—

John S. Long's Son's 1899 list:
Chain... 50%

Parts... 50%

Spokes... 50%

Tub... 60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—
See Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—Tackle—

Common Wooden... 70@70&10%

Cleveland's steel... 60&10@70%

Ford's Star Brand Self Lubricating... 60&10%

Hollow Steel, Ford's Pat. Star Brand... 50&10%

Lane's Patent Automatic Lock and Junior... 30%

Stowell's Novelty, Mal. Iron... 50&10%

See also Machines, Hoisting.

Boards Stove—

Zinc, Crystal, &c... 40&10@5%

Boils—

Carriage, Machine &c.—

Common, list Jan. 30, '95... 65&10@%

Norway Iron, \$3.00, list Oct. 7, '94... 80@80&5%

Phila. Eagle, \$3.00, list May 25, '99... 80@80&10%

Bolt Ends, list Jan. 30, '95, 70&70&10%

Machine, list Oct. 1, '99... 70&70&10%

Machine with C. P. C. & T. Nuts... 65&12&4%

Boys—The rapid advances in manu-

facturers' prices enable the jobbers to cut prices freely.

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:

Inch... 3 4 5 6 8

Per doz... \$0.25 30 39 47 65

Cast Iron Spring Foot:

Inch... 6 8 10

Per doz... \$1.00 1.25 1.75

Cast Iron Chain, Flat, Japanned:

Inch... 6 8 10

Per doz... \$0.75 1.05 1.50

Cast Iron Shutter, Brass Knobs:

Inch... 6 8 10

Per doz... \$0.67 80 1.00

Wrought Barrel Brass Knob:

Inch... 3 4 5 6 8

Per doz... \$1.44 50 61 70 1.23

Wrought Barrel... 70&10@75&5%

Wrought... Bronzed, 40&5@50&10%

Wrought Flush, B. K. 50&10@60&10%

Wrought Shutter... 40&10&10@60&5%

Wrought Square Neck... 50@50&10%

Wrought Sunk... 50@50&10%

Ives' Pat. it Door... 60%

Stove and Plow—

Plow... 60&10@%

Stove... 77&5%

Tire—

Common... 77&5%

American Iron... 80@80&5%

Gates, Molasses and Oil—

Stebbins.....50¢10¢80¢10¢10¢

Gauges—

Marking, Mortise, etc.....55¢10¢55¢10¢10¢

Barrett's Comb. Roller Gauge.....doz. \$6.75@7.35

Stanley R. & L. Co.'s Butt & Babbet Gauge.....doz. \$8.00@10.00

Wire, Brown & Sharpe's.....35¢

Wire, Morse's.....35¢

Wire P. S. & W. Co.....30¢30¢10¢

Climets—Single Cut—

Nail, Metal, Assorted, gro. \$1.40@1.60

Spike, Metal, Assorted, gro. \$2.80@3.25

Nail, Wood Handled, Assorted, gro. \$1.75@2.00

Spike, Wood Handled, Assorted, gro. \$3.25@3.50

Glass, American Window

Jobbers' List, Jan. 21, 1901

Less than Carlados.....80¢20¢

Carlados.....85¢55¢

5000 Boxes.....87¢

Glue—Liquid, Fish—

List A, Bottles or Cans, with Brush.....37¢40¢

List B, Cans (¼ pts., pts., etc.).....33¢35¢

List C, Cans (¼ gal., gal.).....25¢45¢

International Glue Co. (Marlin's).....40¢10¢50¢

Glue Pots—See Pots, Glue.**Groase, Axle—**

Common Grade.....gro. \$5.00@6.00

Dixon's Everlasting.....10-m palls, ea. 85¢

Dixon's Everlasting, in bxs. 1 doz. 1 m \$1.20; 2 m \$2.00

Snow Flake: 1 qt. cans per doz. \$2.00; 2 qt., \$3.30; 3 gal. cans per doz. \$6.00; 3 gal. \$16.00; 5 gal. \$24.00

Grindstones—

Bicycle Grindstones, each.....\$2.50@3.00

Pike Mfg. Co.: Improved Family Grindstones, per inch, per doz. \$2.00 (35¢)

Pike Mower Knife and Tool Grinder, each.....\$9.00

Veloce Ball Bearing, mounted, Angle Iron Frames.....each, \$3.25

Guards, Snow—

Chive and Wire Spring Co.: Galv. Steel 1000.....\$9.00

Copper 1000.....\$18.00

Gun Powder—See Powder.**Hack Saws—See Saws.****Hafte, Awl—**

Peg Patent, Leather Top.....\$4.50@5.55

Peg Patent, Plain Top.....\$3.50@5.75

Sewing, Brass Ferrule.....\$1.50@1.60

Saddlers', Brass Ferrule.....\$1.35@1.45

Peg, Common.....\$1.25@1.35

Brad, Common.....\$1.50@1.75

Halters and Ties—

Covert Mfg. Co.: Web.....45¢25¢

Jute Rope.....45¢25¢

Sisal Rope.....30¢25¢

Covert's Saddlery Works: Web and Leather Halters.....70¢

Jute and Manila Rope Halters.....70¢

Jute, Manila and Cotton Rope Ties.....70¢

Sisal Rope Ties.....65¢20¢

Hammers—

Handled Hammers—

Heller's Machinists'.....50¢50¢54¢

Heller's Farriers'.....50¢50¢54¢

Magnet Tack, Nos. 1, 2, 3, \$1.25, \$1.50, \$1.75

Peck, Stow & Wadsworth.....50¢10¢

Payette & Plumb: Plumb, A. E. Nail.....40¢10¢74¢

Engineers' and B. S. Hand, 60¢10¢24¢

Machinists' Hammers.....60¢

Riveting and Finners'.....40¢10¢74¢

Sargent's C. S. New List.....40¢

Heavy Hammers and Sledges—

5 lb. and under.....lb. 45¢

5 to 10 lb.....lb. 35¢ 80¢10¢30

Over 10 lb.....lb. 30¢ 10¢25¢

Wilkinson's Smiths'.....74¢10¢10¢

Handcuffs and Leg Irons

See Police Goods

Handles—

Agricultural Tool Handles—

Axe, Pick, etc.....50¢60¢10¢

Hoe Rake, Fork, etc.....50¢60¢10¢

Shovel, etc., Wood D Handle.....50¢50¢54¢

Cross-Cut Saw Handles—

Atkins.....40¢25¢

Champion.....45¢45¢10¢

Dixon.....50¢

Mechanics' Tool Handles—

Auger, assorted.....gro. \$2.30@3.50

Brad Axl.....gro. \$1.25@1.50

Chisel Handles: Apple Tanged Firmer, gro. ass'd. \$2.25@3.35; large, \$2.50@3.50. Hickory Tanged Firmer, gro. ass'd. \$1.75@2.80; large, \$3.50@5.70. Apple Socket Firmer, gro. ass'd. \$1.70@1.85; large, \$3.00@3.25. Hickory Socket Firmer, gro. ass'd. \$1.60@1.75; large, \$3.15@3.20. Hickory Socket Framing, gro. ass'd. \$3.50@3.75; large, \$5.50@5.55. File, assorted.....gro. \$1.00@1.15. Hammer, Hatchet, Axe, etc.....60¢. Hand Saw, Varished, doz. 70¢70¢. Not Varished.....doz. 65¢60¢. Plane Handles: Jack, doz. 35¢; Jack Bolted.....55¢60¢. Fore, doz. 35¢35¢; Fore, Bolted.....70¢75¢

Hangers—

Barn Door, New Pattern, Round Groove, Regular: Inch.....3 4 5 6 8 Doz.....\$0.85 1.20 1.50 1.90 2.50

Barn Door, New England Pattern, Check Back, Regular:

Inch.....3 4 5 6 Doz.....\$1.50 1.75 2.50 3.00

Chicago Spring Butt Co.: Friction.....25¢

Oscillating.....25¢

Big Twin.....25¢

Chisholm & Moore Mfg. Co.: Baggage Car Door.....50¢

Elevator.....40¢

Railroad.....55¢

Cronk Hanger Co.: Loose Axle.....60¢

Roller Bearing.....60¢10¢

Lane Bros.: Parlor Ball Bearing.....\$4.00

Parlor, Standard.....\$3.25

Parlor, New Model.....\$3.25

Parlor New Champion.....\$3.25

Barn Door, Standard.....60¢10¢

Covered.....50¢10¢10¢55¢

Special.....60¢10¢

Lawrence Bros.: Advance.....60¢

Cleveland.....70¢

Crown.....70¢

New York.....60¢

Pe rless.....60¢10¢

Sterling.....60¢

McKinney Mfg. Co.: No. 1, Special, \$15.....60¢10¢

No. 2, Standard, \$18.....60¢10¢

Stowell Mfg. and Foundry Co.: Acme Parlor Ball Bearing.....40¢

Atlas.....60¢

Badger Barn Door.....50¢

Baggage Car Door.....50¢

Climate Anti-Friction.....40¢

Elevator.....40¢

Express.....40¢

Interstate.....40¢

Lundy Parlor Door.....50¢

Marble.....50¢

Matchless.....60¢

Nansen.....60¢10¢

Railroad.....50¢

Street Car Door.....50¢

Steel, Nos. 300, 404, 500.....40¢15¢

Stowell Parlor Door.....50¢

Wild West, Nos. 300, 404, 500.....50¢

Zenith for Wood Track.....50¢

Taylor & Bogue Foundry Co.: Kidders.....60¢15¢10¢55¢

Columbian Hdw. Co.: American Trackless.....35¢45¢10¢

Wilcox Mfg. Co.: Bike Roller Bearing.....60¢10¢

C. J. Roller Bearing.....60¢10¢

Cycle Ball Bearing.....60¢

Dwarf Ball Bearing.....60¢

Ives, Wood Track.....60¢10¢

L. T. Roller Bearing.....60¢10¢55¢

New Era Roller Bearing.....50¢10¢

O. K. Roller Bearing.....60¢10¢55¢

Prindle, Wood Track.....60¢

Richards' Wood Track.....60¢

Spencer Roller Bearing.....60¢10¢

Tandem Nos. 1 and 2.....60¢

Underwriters' Roller Bearing.....40¢

Wilcox Auditorium Ball Bearing.....40¢

Wilcox Barn Trolley No. 123.....40¢

Wilcox Fire Trolley Roller Bearing.....40¢

Wilcox Le Roy Noiseless Ball Bearing.....40¢

Wilcox New Century.....50¢10¢10¢

Wilcox Trolley Ball Bearing.....40¢

Harness Menders—See Menders.**Harness Snaps—See Snaps.****Hatches—**

Best Brands.....60¢50¢10¢

Cheaper Brands.....60¢50¢10¢

Note.—Net prices after made.

Hay and Straw Knives—

See Knives.

Hinges—**Blind and Shutter Hinges—**

Surface Gravity Locking Blind: (Victor; National; 1883 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.) No.....1 1 1/2 1 3/4 5 Doz. pair.....\$0.75 1.45 1.50

Mortise Shutter: (L. P. O. S., Dixie, etc.) No.....1 1 1/2 1 3/4 5 Doz. pair.....\$0.65 .55 .65 .85

Mortise Reversible Shutter (Buffalo, etc.) No.....1 1 1/2 1 3/4 5 Doz. pair.....\$0.65 .60 .65 .85

North's Automatic Blind Fixtures, No. 2, for Wood, \$0.00; No. 3, for Brick, \$1.50.....10¢

Parker.....70¢75¢

Reading's Gravity.....75¢10¢

Sargent's, Nos. 1, 3, 5, 11 & 15.....70¢10¢70¢50¢

Stanley's Steel Gravity Blind Hinges, 1/2 doz. sets, without screws, \$0.50; with screws, \$1.15. Wrightville Hdw. Co.: O. S. Lull & Porter.....50¢25¢

Acme, Lull & Porter.....75¢10¢

Queen City Reversible.....75¢10¢

Stenger's Positive Locking, Nos. 1 & 3.....70¢10¢55¢

Shepard's Noiseless, Nos. 60, 65, 65.....70¢10¢

Niagara, Gravity Locking, Nos. 1, 3 & 5.....75¢10¢

1908, Old Pat'n. Nos. 1, 3 & 5.....75¢10¢

Tip Pat'n, Nos. 1, 3 & 5.....75¢10¢

Buffalo Gravity Locking, Nos. 1, 3 & 5.....75¢10¢

Shepard's Double Locking, Nos. 30 & 25.....70¢10¢

Champion Gravity Locking, No. 75.....75¢10¢

Steamboat Gravity Locking, No. 10.....50¢75¢

Pioneer, Nos. 300, 45 & 54.....75¢75¢

Empire, Nos. 101 & 103.....70¢75¢

H. C. S. Mortise Gravity Locking, No. 2.....60¢10¢

Gate Hinges—

Clark's or Shepard's—Doz. sets: No.....1 2 3 Hinges with Latches.....\$1.56 2.50 3.55

Hinges only.....\$1.50 1.90 2.90

Latches only.....65 .65 .95

New England: With Latch.....doz. \$1.55

Without Latch.....doz. \$1.25

Reversible Self-Closing: With Latch.....doz. \$1.80

Without Latch.....doz. \$1.45

Western: With Latch.....doz. \$1.40@1.75

Without Latch.....doz. \$0.95@1.30

Wrightville Hdw. Co.: Shepard's or Clark's, Nos. 1 & 2, 3, 5 & 25¢

Shepard's or Clark's, No. 3.....55¢55¢

Spring Hinges—

Holdback, Cast Iron, gro. \$7.00@7.25

Non-Holdback, Cast Iron.....gro. \$6.50@6.75

J. Bardley: Bardley's Patent Checking.....15¢

Sommer Bros.: Sommer Ball Bearing Floor Hinges.....40¢

Sommer Spring Hinges.....40¢

Chicago Spring Butt Co.: Chicago.....25¢

Floor Hinges.....50¢

Garden City Engine House.....25¢

Keane's Saloon Door.....25¢

Kreighenbush & Foundry Co.: No. 70 & 80 Holdback Detachable \$2.50

Lawson Mfg. Co.: Matchless.....35¢

Matchless Pivot.....45¢

Payette Mfg. Co.: Oblique.....50¢10¢

Stover Mfg. Co.: Ideal, No. 18, Detachable, 1/2 gr. \$12.50

Ideal, No. 4.....1/2 gr. \$9.00

New Idea No. 1.....1/2 gr. \$9.00

New Idea, Double Acting.....45¢

Columbian Hdw. Co.: Acme, Wrt. Steel.....30¢

Acme, Brass.....30¢

Acme, American.....30¢

Columbia, No. 14.....1/2 gr. \$9.00

Columbia, No. 18.....1/2 gr. \$9.50

Columbia, Adjustable.....30¢

Gem, new list.....35¢

Oxford, new list.....25¢

Wrought Iron Hinges—

Strip and T Hinges, etc., list Mar. 16, 1901:

Light Strap Hinges.....75¢

Heavy Strap Hinges.....80¢

Light T Hinges.....70¢

Heavy T Hinges.....85¢55¢

Extra Heavy T Hinges.....75¢10¢

Hinge Hasps.....60¢

Cor. Heavy Strap.....90¢

Cor. Ex. Heavy T.....75¢10¢

Screw Hook: 8 to 12 in.....lb. 3 c

and Strap: 12 to 20 in.....lb. 2 1/2 c

and Strap: 22 to 36 in.....lb. 3 1/2 c

Screw Hook and Eye: 1/4 to 1 inch.....lb. 5 c

1/2 inch.....lb. 6 c

3/4 inch.....lb. 7 c

Miscellaneous—

Hoffman's Steel Spring Butt Hinges.....40¢10¢

Hoffman's Offset Refrigerator Hinges.....40¢10¢

Hods, Coal—

15 16 17 18 inch. Gale, Open.....\$9.10 \$5.55 \$5.80 \$5.15 1/2 doz.

Jap. Open.....\$1.60 1.95 1.10 1.40 1/2 doz.

Gale, Funnel.....\$2.55 \$3.05 \$3.35 3.65 1/2 doz.

Jap. Funnel.....\$2.10 2.45 2.65 2.90 1/2 doz.

Hoes—Eye.....60¢55¢10¢55¢

Grub, list Feb. 23, 1899. 70¢5¢70¢10¢

D. & H. Scovill.....35¢

Handled—

Sept. 1, 1900, List: Field and Garden.....75¢55¢

Ladies', Boys', Toy and Outdoor.....70¢10¢10¢

Street and Mortar.....75¢10¢10¢

Cotton.....70¢10¢10¢55¢

Planters'.....70¢10¢10¢55¢

Weeding.....75¢

Note.—Many farmers and jobbers use a diversity of lists, and often sell at net prices.

Ft. Madison Crucible Garden Hoe.....75¢35¢

Ft. Madison Crescent Cultivator Hoe, per doz.....75¢10¢35¢

Ft. Madison Mattock Hoe: Regular Weight.....1/2 doz. \$4.50

Junior Size.....1/2 doz. \$4.00

Ft. Madison Sprouting Hoe, 1/2 doz. \$4.80

Ft. Madison

Ladies—Melting—

A. & W. Mfg. Co. 400 400 100
F. & W. 400 400 100
Reading 400 400 100
Sargent's 400 400 100

Lanterns—Tubular—

Regular Tubular doz. \$4.50 to \$4.75
Side Lift Tubular doz. \$4.75 to \$5.25
Square Lift Tubular doz. \$4.75 to \$5.25
Other Styles 400 400 100

Bull's Eye Police—

No. 1, 3/4 inch \$3.60
No. 2, 5 inch \$4.00

Latches, Thumb—

Roggin's Latches doz. \$2 to \$3.50
Lawn Mowers—
See Mowers, Lawn.

Leaders Cattle—

Small doz. 50c; large, 50c
Cover Mfg. Co. 400 400 100

Lemon Squeezers—

See Squeezers, Lemon.
Lifters, Transom—
Solid Grip, Payson Mfg. Co. 80c
R. & E. 45c

Lines—

Wire Clothes, Nos. 18 19 20
100 feet \$1.20 \$1.00 1.65
75 feet \$1.80 1.70 1.30

Osceola Mills—

Crown Solid Braided Chalk 33c
Mason's, No. 0 to No. 3 33c
Mason's Cordage Works
Solid Braided Chalk, No. 0 to 3 40c
Silver Lake Braided Chalk, No. 0, 50c
No. 1, 60c; No. 2, 70c; No. 3, 75c
U. S. 30c

Looks—Cabinet—

Cabinet Locks 33c to 35c
Door Locks, Latches, &c.—
[Net prices are very often made on these goods.]

Reading Hardware Co.—

R. & E. Mfg. Co. 400 400 100
Sargent & Co. 400 400 100

Elevator—

Stowell's 33c to 35c
Padlocks—
Wrought Iron 75c to 1.00
R. & E. Mfg. Co. Wrs. Steel and Brass 50c

Sash, &c.—

Fitch's
Bronze and Brass 60c to 70c
Iron 70c
Ives' Patent
Bronze and Brass 60c to 70c
Iron 70c
Wrought Bronze and Brass 60c to 70c
Wrought Steel 60c to 70c
Payson's Signal 60c to 70c
Reading 60c to 70c

Machines—Boring—

Without Augers.
Upright. Angular.
Improved No. 3 4.25 No. 1 5.00
Improved No. 4 3.75 No. 2 3.38
Improved No. 5 2.75
Jennings' 2.50 5.00
Miller's Falls 5.75
Swan's, Rice's Pat. 2.50 2.75
Swan's, No. 500 5.10 No. 200 6.45

Holisting—

Moore's Anti-Friction Differential Pulley Block 30c
Moore's Hand Holist, with Lock Brake 30c
Moore's Portable Pneumatic Holist 25c
Ice Cutting—
Chandler's 15c

Washing—

Wayne American 4 doz. \$28.00
Western Star, No. 2 4 doz. 28.00
Western Star, No. 3 4 doz. 30.00
St. Louis, No. 41 4 doz. 30.00

Mallets—

Hickory 45c to 50c
Lignumvitae 45c to 50c
Timbers, Hickory and Applewood, doz. 50c to 55c

Mats—Door—

Mastic Steel (W. G. Co.) 10c
Mattocks—
See Picks and Mattocks.
Meat Cutters—
See Cutters, Meat.

Milk Cans—See Cans, Milk—

Milk—Coffee—
Enterprise Mfg. Co. 25c to 30c
National, list Jan. 1, '94 30c
Parker's Columbia and Victor 30c

Mallets—

Parker's Box and Side 50c to 60c
Swift, Lane Bros. 30c
Mining Knives—
See Knives, Mining.

Molasses Gates—

See Gates, Molasses.
Money Drawers—
See Drawers, Money.

Mowers, Lawn—

Net prices are generally quoted.
Cheap all sizes, \$1.80 to \$2.10
Good all sizes, \$2.50 to \$2.75

High Grade 4.25 4.50 4.75 5.00

Continental 60c to 65c
Great American 70c to 75c
Great American Ball Bearing 60c to 65c
Quaker City 70c to 75c
Pennsylvania 70c to 75c
Pennsylvania Golf 70c to 75c
Pennsylvania Horse 70c to 75c
Pennsylvania Pony 70c to 75c
Philadelphia 70c to 75c

Style M. S. C. K. T. 70c to 75c

Style A, all sizes 65c to 70c
Style E, Low Wheel 60c to 65c
Style E, High Wheel 70c to 75c
Drexel and Gold Coin, low list 60c to 65c

Nails—

Out and Wire. See Trade Report.
Wire Nails and Brads, Papered.
List July 30, 1899 55c to 10c
Hungarian, Finishing, Upholsterers, etc. See Tacks.

Horse—

Nos. 6 7 8 9 10
A. C. 25c 25c 25c 25c 25c
Ausable 25c 25c 25c 25c 25c
Capewell 15c 15c 15c 15c 15c
C. B. K. 25c 25c 25c 25c 25c
Champion 25c 25c 25c 25c 25c

Clinton 10c 10c 10c 10c 10c
Maud S. 25c 25c 25c 25c 25c
Neposset 25c 25c 25c 25c 25c
Putnam 25c 25c 25c 25c 25c
Vulcan 25c 25c 25c 25c 25c
Amer can, Nos. 5 to 10 25c
Jobbers' special brands, per lb. 5c to 6c

Picture—

Brass Head, 45c 50c 70c 95c 1.00 gro.
Por. Head 1.10 1.10 1.10 1.10 1.10
Nippers, See Pliers and Nippers.
Nut Crackers—
See Crackers, Nut.

Nuts—
Cold Punched Of
Mfrs. or U. S. Standard. Hat.
Hexagon, plain 5.50c
Square, plain 5.50c
Square, C. T. & R. 5.50c
Hexagon, C. T. & R. 5.50c
Hot Pressed:
Mfrs., U. S. or Nor. Gauge Stand.
Square Blank or Tapped 5.50c
Hexagon Blank or Tapped 5.50c

Oakum—
Best or Government lb. 64c
Navy lb. 5c
U. S. Navy lb. 64c
Plumbers' Sprung Oakum 54c
In carload lots 40c lb. off f.o.b. New York.

Oil, Axle—
Snow Flake:
1 pt. cans, per doz. \$3.00
1 qt. cans, per doz. \$4.80
1 gal. cans, per doz. \$15.00
5 gal. cans, per doz. \$65.00

Oil Tanks—See Tanks, Oil.
Brass and Copper 40c to 50c
Tin or Steel 60c to 65c
Zinc 60c to 65c
Paragon:
Brass and Copper 40c to 50c
Tin or Steel 60c to 65c
Zinc 60c to 65c
Malleable, Hammers Improved, No. 1, \$3.80; No. 2, \$4; No. 3, \$4.40
Malleable, Hammers Old Pattern, same list 50c to 10c
Wilmot & Hobbs Mfg. Co.:
Spring Bottom Cans 70c to 10c
Railroad Oilers etc. 80c to 10c

Openers—Can—
French doz. 35c
Iron Handle doz. 35c
Sprague, Iron Handle per doz. 35c to 40c
Sardine Scissors doz. \$1.75 to \$3.00
Tip Top per doz. \$0.75
National, 9 gro. \$1.75 to \$2.00
Burdett, 9 gro. per doz. 40c to 45c
Waldorf, 9 gro. \$2.85

Egg—
Nickel Plate per doz. \$2.25
Silver Plate per doz. \$3.50

Packing—
Asbestos Packing, Wick and Rope, 15c lb.

Rubber—
Sheet, C. I. 8c to 12c
Sheet, C. O. S. 9c to 12c
Sheet, C. B. S. 10c to 12c
Sheet, Pure Gum 50c to 70c
Jute Red 35c to 40c
Jenkins' Standard, 7 & 8 35c to 40c

Miscellaneous—
American Packing 70c to 10c lb.
Cotton Packing 15c to 10c lb.
Italian Packing 9c to 10c lb.
Jute 35c to 40c lb.
Russia Packing 70c to 10c lb.

Pails—Creamery
No. 1, 40c; with gauges, No. 1 60c; No. 2, 75c; No. 3, 90c

Galvanized—
Price per gro.
Quart. 10 15 16
Water, Regular 15.00 16.00 16.00
Water, Heavy 16.00 17.00 17.00
Fire, Ed. Bottom 17.00 18.00 18.00
Well 17.00 18.00 18.00

Pans—Dripping—
Standard List 60c to 10c to 55c
Fry—
Common Lipped:
No. 1 1 2 3 4 5
Per doz. \$0.60 75c 85c 95c 1.15

Roasting and Baking—
Regal, S. S. & Co. 4 doz. Nos. 5 45c; 10 50c; 20 55c; 30 60c
Simplex, 9 gro. No. 40 33.00; 50 34.50; 60 36.00; 140 43.00; 150 43.50; 160 44.00

Paper—
Building Paper—
Asbestos lb.
Building Felt 50c
Mill Board, sheet, 10 x 10 inches 50c
Mill Board, roll, thicker than 1-16 inch 50c
Mill Board, roll, 1-16 in. thick and less 50c

Rosin Sized Sheathing: 500 sq. ft.
Light wt., 30 lbs. to roll 50c
Medium wt., 30 lbs. to roll 50c
Heavy wt., 40 lbs. to roll 50c
Medium Grades Water Proof Sheathing 50c to 1.25
Deafening Felt, 5 & 6 and 1/2 sq. ft. to lb., ton 35c to 37c

Red Rope Roofing, 250 sq. feet per roll. \$1.65

Tarred Paper.
1 ply (roll 500 sq. ft.) 10c to 27c
2 ply, roll 108 sq. ft. 50c
3 ply, roll 108 sq. ft. 70c
Slater's Felt (roll 500 sq. ft.) 50c to 60c
R. R. M. Stone Surfaced roofing (roll 110 sq. ft.) 27c

Sand and Emery—
List Dec. 23, 1899 50c to 10c to 10c to 10c

Parers—Apple—
Advance doz. \$4.50
Baldwin doz. \$5.00
Bonanza each \$5.00
Dandy each \$7.50
Kurela 1898 each \$16.00
Family Bay State doz. \$12.00
Hudson's Little Star doz. \$4.00
Hudson's Rocking Table doz. \$5.50
Improved Bay State doz. \$27.00 to \$30.00
New Lightning doz. \$5.50
Reading 72 doz. \$4.00
Reading 78 doz. \$7.00
Turn Table 78 doz. \$5.50
White Mountain doz. \$4.00

Potato—
Baratona doz. \$5.50
White Mountain doz. \$4.50

Pigeons—Clay
Markie's Black Birds, f.o.b. factory, per M 35c
See also Traps, Target.

Picks and Mattocks—
List Feb. 23, 1899 70c to 10c to 10c to 55c

Pinking Irons—
See Irons, Pinking.

Pine—Esoutecheon—
Brass 60c
Iron, list Nov. 11, '88 60c

Pipe, Cast Iron Soil—
Factory Shipments—Carload lots.
Standard, 3-6 in. 65c to 55c
Extra Heavy, 3-6 in. 70c to 10c
Fittings 75c to 10c to 55c
NOTE—Freight allowed on Carload lots.

Pipe, Merchant, Boiler
Tubes, &c.—
Less than Carloads to Consumers.
Merchant Pipe.

Galvanized.
Black. 61c
4 to 1/2 inch 61c
1/2 to 10 inch 61c
Boiler Tubes Up to 22 feet.

Steel.
1 to 1 1/2 inch and 2 1/4 to 5 inch inclusive 65c to 55c
2 to 2 1/2 inch, inclusive 60c
5 to 10 inches 60c

Iron.
1 to 1 1/2 inch and 2 1/4 in. 45c to 55c
1 1/2 to 2 1/2 inch 45c
2 1/2 to 3 inch 55c
3 to 4 inch 55c
4 to 5 inch 55c
5 to 6 inch 61c
NOTE—Prices to jobbers are from 5c to 10c less than above.

Pipe, Sewer—
Delivered at Eastern Points.
Standard Pipe, 2 to 2 1/2 inch 70c to 75c
Fittings, 2 to 2 1/2 inch 70c to 75c

Planes and Plane Irons—
Molding 40c to 10c to 10c to 10c
Bench, First quality 45c to 10c to 45c to 10c to 55c
Bench, Second quality 45c to 10c to 45c to 10c to 55c

Bailey's (Stanley R. & L. Co.)
50c to 10c to 50c to 10c to 10c
Gage Self Setting 35c
Bailey's (Stanley R. & L. Co.) 50c to 10c to 50c to 10c to 10c

Iron Planes—
Bailey's (Stanley R. & L. Co.) 50c to 10c to 50c to 10c to 10c
Chaplin's Iron Planes 50c to 10c to 50c to 10c to 10c
Miscellaneous Planes (Stanley R. & L. Co.) 50c to 10c to 50c to 10c to 10c
Sargent's 50c to 10c to 50c to 10c to 10c

Plane Irons—
Wood Bench Plane Irons 30c to 50c to 10c to 55c
Buck Bros. 30c
Butcher's 55c to 50c to 25c to 25c
Stanley R. & L. Co. 50c to 10c to 50c to 10c to 10c
L. & J. White 20c to 25c to 25c

Planters, Corn, Hand.
Kohler's Eclipse 40c to 50c

Plates—
Felloe lb. 3 1/2c to 4c
Self-Sealing Pie Plates (S. S. & Co.) 50c
No. 3.00 50c

Pliers and Nippers—
Button Pliers 70c to 10c to 75c
Gas Burner, per doz., 5 in., \$1.15 to \$1.30; 6 in., \$1.35 to \$1.45
Gas Pipe 7 8 10 12 in. \$1.75 \$2.00 \$2.75 \$3.75

Asses Nippers—
Paralle Pliers 20c
Paragon Pliers 50c to 55c
Lodi Pliers 50c to 55c
Kim City Fence Pliers 35c
Cronk Hanger Co.:
American Button 75c to 10c
Burdett's 60c
Improved Button 70c to 10c
Stub's Pattern 50c
Combination and others 25c
Hall's Farriers' Nippers, Pincers and Tools 50c to 55c

P. & W. Tinnars' Cutting Nippers
Swedish Slide, End and Diagonal Cutting Pliers 30c to 35c
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds 40c

Plumbs and Levels—
Plumbs and Levels 75c to 75c to 10c

Davis Iron, Machinist Nos. 1 to 14 3c
Davis Iron, adjustab e Nos. 6 to 49 35c
Dixton's 70c
Pocket Levels 75c to 10c to 75c to 10c
Stanley R. & L. Co. 70c to 10c to 70c to 10c to 10c
Stanley's Duplex 25c to 10c to 25c to 10c to 10c
Woods' Extension 33c to 45c

Poachers, Egg—
Buffalo Steam Egg Poachers, No. 3, No. 1, \$7.20; No. 2, \$11.00; No. 3, \$11.00; No. 4, \$14.50; No. 5, \$18.00

Points, Glaziers—
Bulk and 1 lb. papers, lb. 8c to 8 1/2c
1/4-lb. papers, lb. 8 1/2c to 8 3/4c
1/2-lb. papers, lb. 8 3/4c to 8 1/2c

Pokes, Animal—
Ft. Madison Hawkkeys 40c to 45c
Ft. Madison, Western 40c to 45c

Police Goods—
Manufacturers' Lists 55c to 55c to 55c
Tower's 25c

Polish—Metal—
Prestoline Liquid, No. 1 (1/2 pt.), 40c
\$3.00; No. 2 (1 qt.), \$9.75
Prestoline Paste 40c to 10c
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, 40c
40c; 50c; 70c; 80c; 90c; 100c; 110c; 120c; 130c; 140c; 150c; 160c; 170c; 180c; 190c; 200c; 210c; 220c; 230c; 240c; 250c; 260c; 270c; 280c; 290c; 300c; 310c; 320c; 330c; 340c; 350c; 360c; 370c; 380c; 390c; 400c; 410c; 420c; 430c; 440c; 450c; 460c; 470c; 480c; 490c; 500c; 510c; 520c; 530c; 540c; 550c; 560c; 570c; 580c; 590c; 600c; 610c; 620c; 630c; 640c; 650c; 660c; 670c; 680c; 690c; 700c; 710c; 720c; 730c; 740c; 750c; 760c; 770c; 780c; 790c; 800c; 810c; 820c; 830c; 840c; 850c; 860c; 870c; 880c; 890c; 900c; 910c; 920c; 930c; 940c; 950c; 960c; 970c; 980c; 990c; 1000c

Stove—
Black Eagle Benzine Paste, 5 lb cans 10c
Black Eagle, Liquid, 1/2 pt. cans 10c

Black Jack Paste, 3/4 lb cans, 70c
Ladd's Black Beauty, gr. \$10.00
Joseph Dixon's, 50c to 75c
Dixon's Plumbago 10c
Fireside 40c
Gem, 40c
Japanese 10c
Jet Black 35c
Peerless Iron Enamel, 1/2 pt. cans 15c

Wynn's:
Black Silk, 5 lb pail, each 70c
Black Silk, 1/2 lb box 10c
Black Silk, 5 oz. box 30c
Black Silk, 1/2 pt. liq. 10c

Poppers, Corn—
Round or Square:
1 qt. doz. \$6.50 to \$7.00
1 1/2 qt. doz. 9.00 to 10.00
2 qt. doz. 10.50 to 11.00

Post Hole and Tree Augers and Diggers—
See also Diggers, Post Hole, &c.

Potato Parers—
See Parers, Potato.

Pots—Glue—
Enameled 45c
Tinned 40c

Powder—
In Cans:
Duck, 1 lb. each 45c
Fine Sporting, 1 lb. each 75c
Rifle, 1/2 lb. each 15c
Rifle, 1-lb. each 25c

In Kegs:
Duck, 6 1/2-lb. kegs 22.25
Duck, 12 1/2-lb. kegs 44.25
Duck, 25-lb. kegs 55.00
Rifle, 6 1/2-lb. kegs 22.25
Rifle, 12 1/2-lb. kegs 44.25
Rifle, 25-lb. kegs 55.00

King's Semi-Smokeless:
Keg (25 lb bulk) 55.00
Half Keg (12 1/2 lb bulk) 33.50
Quarter Keg (6 1/2 lb bulk) 17.75
Case 24 (1 lb cans bulk) 85.50
Half case (1 lb cans bulk) 42.75
King's Smokeless: Shot Gun Rifle
Keg (25 lb bulk) 55.00
Half Keg (12 1/2 lb bulk) 33.50
Quarter Keg (6 1/2 lb bulk) 17.75
Case 24 (1 lb cans bulk) 14.00 17.00
Half case 12 (1 lb cans bulk) 7.25 8.75

Presses—
Fruit and Jelly—
Enterprise Mfg. Co. 30c to 25c

Pruning Hooks and Shears—See Shears.

Pullers, Nail—
Cyclops 40c to 40c to 10c
Diamond B. No. 2, ca-e lots, 40c to 50c
Diamond B. No. 2, case lots, 40c to 50c
Diamond B. No. 1, 4 doz. \$18; No. 2, \$18.50; No. 3, \$19; No. 4, \$19.50
Miller's Falls, No. 3, per doz. \$12.00 15c to 15c

Puller, Case Lots:
No. 1 (large), 4 doz. \$4.50; No. 2 (large), \$5.50; No. 3 (small), \$5.00; No. 3-B (large), \$5.50; No. 3-B (small), \$5.00; No. 2-B (large), \$4.50; No. 2-B (small), \$4.00

Pulleys—Single Wheel—
Inch 2 1/2 3 4 5
Awning doz. \$0.45 70c 95c
Inch 2 1/2 3 4 5
Hay Fork, Swivel or Solid Eye doz. \$1.35 to \$1.50

Hot House, doz. \$0.65 50c 1.20
Inch 1 1/4 1 1/2 1 3/4 2
Screw doz. \$0.15 20c 25c 30c
Inch 1 1/4 1 1/2 1 3/4 2
Side doz. \$0.30 40c 55c 60c
Inch 1 1/4 1 1/2 1 3/4 2
Tackle doz. \$0.30 45c 55c 1.10
Stowell's:

Ceiling or End, Anti-Friction 80c
Dumb Walter, Anti-Friction 60c to 10c
Hay Fork, Anti-Friction, 5-in. Wheel 40c
No. 1, 10c; No. 2, 15c; No. 3, 20c; No. 4, 25c; No. 5, 30c; No. 6, 35c; No. 7, 40c; No. 8, 45c; No. 9, 50c; No. 10, 55c; No. 11, 60c; No. 12, 65c; No. 13, 70c; No. 14, 75c; No. 15, 80c; No. 16, 85c; No. 17, 90c; No. 18, 95c; No.

often shaded by jobbers \$0.50 to 1.00, and Common, Plain Back Shotels are generally sold by jobbers at \$6.75.

Sieves and Sifters—
Hunter's Imitation, gro. \$9.50 to 10.00
Buffalo Metallic Blue, S. S. & Co., per gr.:
14x16 10x16 15x20
\$12.00 \$13.50 \$15.00
F. J. Meyers' Mfg. Co.:
Eclipsor..... per gr. \$9.25
Excelsior..... per gr. \$10.35
Hunter's Genuine..... per gr. \$12.50
No Name, Hunter's..... per gr. \$11.50
Standard..... per gr. \$10.35
Shaker (Barley's Pat.) Flour Sifters.....
per doz., \$9.00..... 30%

Sieves, Tin Rim—
Per dozen
Mesh..... 14 16 18 20
Black, full size..... \$9.95 \$9.10 1.10
Plated, full size..... \$1.05 1.08 1.10 1.20
Black, scant..... \$0.78 .80 .83

Sieves, Wooden Rim—
Nested, 10, 11 and 12 inch.....
Mean 15, Nested, doz..... \$0.65 to 0.75
Mesh 20, Nested, doz..... 75¢ .85
Mesh 30, Nested, doz..... .90 to 1.00

Sinks—
Cast Iron—
Standard list..... 65¢ to 85¢ 10x
NOTE—There is not entire uniformity
list used by jobbers.
Wrought Steel—
New Era, Galv'd and Enamelled..... 70x55
New Era, Painted..... 60x105
L. & G. Mfg. Co., Galvanized..... 50x
L. & G. Mfg. Co., Enamelled..... 50x

Sinks, Wagon—
Cast Iron..... 70¢ to 10¢ 75x
Malleable Iron..... 10¢ to 10¢ 50x
Steel..... 10¢ to 10¢ 10x

Slates—
Factory Shipments.
"D" Slates..... 50¢ to 10¢ 10x
Unexcelled, etc., Noiseless Slates..... 60
Victoria, etc., Noiseless Slates..... 60x
Wire Bound..... 7 tens 65x
Web Hinge..... 50¢ to 10¢ 50x

Slaw Cutters—See Cutters.
Slicers, Vegetable—
Strling \$2.00..... 38x
Snaps, Harness—
German..... 10¢ to 10¢ 10x
Covert Mfg. Co.:
Derby..... 35x25
High Grade..... 45x25
Jockey..... 40x25
Trojan..... 45x25
Yankee..... 35x25
Yankee, Roller..... 30x25

Covert's Saddlery Works:
Crown..... 60x
German..... 60x
Model..... 60x
Triumph..... 60x
W. & E. T. Fitch Co.:
Bristol..... 40x105
Empire..... 50x25
German..... 40x
National..... 60x25
Perfect..... 45x
Clipper..... 40x
Champion..... 40x
Security..... 40x
Victor..... 60x25
Oneida Community:
Solid Steel..... 65x65x105
Solid Swivel..... 65x65x10x105
Sargent's Patent Guarded..... 60x65x105

Snaths—
Soythe..... 45x65x5
Snips, Tinnners'—See Shears.
Soldering Irons—
See Irons, Soldering.
Spoke Trimmers—
See Trimmers, Spoke.
Spoons and Forks—
Silver Plated—
Good Quality..... 50¢ to 10¢ 60x10x5
Cheap..... 60¢ to 60¢ 10x
International Silver Co.:
447 Rogers..... 40x105
Rogers & Bro., William Rogers Eagle
Brand, and Rogers & Hamilton 30x105
Anchor, Rogers Brand..... 60x
Wm. Rogers & Son..... 60x105
Simeon L. & Geo. H. Rogers Co.:
Silver Plated Fork..... 60x
No. 17 Silver Plated Ware..... 60x105

Miscellaneous—
German Silver..... 60¢ to 10¢ 60x10x105
Simeon L. & Geo. H. Rogers Co.:
German or Nickel Silver, Special list
I. & 10x
Tinned Iron—
Teas..... per gro. 45¢ to 50x
Tables..... per gro. 90¢ to \$1.00

Springs—
Door—
Gem (Coll.)..... 20x
Star (Coll.)..... 30x
Torrer's Rod, 30 in..... per doz. \$1.10 to 1.25
Victor (Coll.)..... 60x10x105

Carriage, Wagon, &c.
1 1/4 in. and Wider:
Black or 1/4 Bright, lb..... 50x
Bright, lb..... 55x
Painted Seat Springs
1 1/4 x 2 x 25 and smaller, per pr..... 50x
1 1/4 x 2 x 25 and smaller, per pr..... 55x
1 1/4 x 3 x 23 and narrower, per pr..... 75x

Sprinklers, Lawn—
Enterprise..... 25x30x
Philadelphia No. 1, per doz. \$12; No. 2,
\$15; No. 3, \$24..... 30x
Squares—
Nickel plated..... List Jan. 5, 1901
Steel and Iron..... 70¢ to 10¢ 75x
Rosewood tiled Try Square and T-Bevels
..... 60¢ to 10¢ 10x75x
Iron Hdl. Try Squares and T-Bevels,
40¢ to 10¢ 40x10x105
Dixon's Try Sq. and T-Bevels..... 60x105
Winterbottom's Try and Miter..... 50x105

Squeezers—
Lemon—
Wood, Common, gro., No. 0, \$5.25
@ \$5.50; No. 1, \$6.25 to \$6.50.
Wood, Porcelain Lined:
Cheap..... doz. \$3.00 to 2.75
Good Grade..... doz. \$3.00 to 3.50
Tinned Iron..... doz. \$0.75 to 1.25
Iron, Porcelain Lined doz. \$2.90 to 3.25
Jennings' Star..... per doz. \$1.55 to 1.90

Staples—
Barbed Blind..... lb. 7¢ to 7x4c
Electricians' Association list.....
80¢ to 10¢ 10x105
Fence Staples, same price as Barbed
Wire. See Trade Report.
Poultry Netting Staples..... per lb.
25¢ to 54¢
Grand Crossing Tack Co.'s list..... 80¢ to 10x

Steels, Butchers'—
Dick's..... 30x
Foster Bros..... 30x
Hartzell Cutlery Co..... 40x25
C. & A. Hoffmann's..... 40x
Steelyards—
25¢ to 25¢ 10x
Stocks and Dies—
Blacksmiths'..... 40¢ to 10¢ 10x
Gardner Die Stocks No. 1..... 50x
Gardner Die Stocks, larger size..... 40x
Green River..... 25x
Lightning Screw Plate..... 25x
Little Giant..... 25x
Rece's New Screw Plates..... 25x30x
Curtis Reversible Ratchet Die Stock..... 25x

Stone—
Soythe Stones—
Chicago Wheel & Mfg. Co.:
Gem Corundum 10 inch, \$3.00 per
gro. 12 inch, \$1.30
Pike Mfg. Co. 1901 list:
Black Diamond S. S..... per gro. \$12.00
Lamotte S. S..... per gro. \$11.00
White Mountain S. S..... per gro. \$9.00
Green Mountain S. S..... per gro. \$6.00
Extra Indian Pond S. S..... per gro. \$7.50
No. 1 Indian Pond S. S..... per gro. \$7.00
No. 2 Indian Pond S. S..... per gro. \$4.50
Leader Red End S. S..... per gro. \$4.50
Balance of 1901 list 38x25

Oil Stones, &c.
Chicago Wheel & Mfg. Co. 1901 list:
Gem Corundum Oil, Double Grit..... 50x
Gem Corundum Oil, Single or Double
Grit..... 35x
Gem Corundum Slips..... 35x
Gem Corundum Razor Hones..... 35x
Pike Mfg. Co. 1901 list:
Arkansas Stone, No. 1, 3 to 5 1/4 in. \$2.90
Arkansas Stone, No. 1, 5 1/4 to 8 in. \$3.50
Arkansas Slips No. 1..... \$4.00
Lily White Washita 4 to 8 in. \$4.00
Rosey Red Washita 4 to 8 in. \$4.00
Washita Stone, Extra, 4 to 8 in. \$6.00
Washita Stone, No. 1, 4 to 8 in. \$4.00
Washita Stone, No. 2, 4 to 8 in. \$3.00
Lily White Slips..... \$4.00
Rosey Red Slips..... \$4.00
Washita Slips..... \$4.00
Washita Slips, No. 1..... 70x
India Oil Stones (entire list)..... 25x
Hindustan No. 1, Regular..... \$1.25
Hindustan No. 1, Small..... \$1.00
Axe Stones (all kinds)..... \$1.00
Turkey Oil Stones, 4 to 8 in. \$2.00
Queer Creek Stones, 4 to 8 in. \$2.00
Queer Creek Slips..... 30x
Sand Stone..... 50x
Belgian, German and Swaty Razor
Hones..... 40x
Natural Grit Carving Knife Hones,
per doz..... \$3.00
Quick Edge Pocket Knife Hones,
per doz..... \$3.00
Mounted Kitchen Sand Stone..... \$1.50

Stones—
Cherry—
Enterprise..... 25x30x
Stops, Bench—
Miller's Falls..... 15x105
Morrell's..... per doz. No. 1, \$10.00; 50x205
Mo' Hs, No. 2, \$11.00..... 50x105
Stops, Window—
Ives' Patent..... 35x55
Stove Boards—
See Boards, Stove.
Stove Polish—See Polish, Stove.
Strainers Pump—
Diamond Joe Pump Strainers, per doz. 75x

Straps, Box—
Cary's Universal, case lots..... 20x105
Stretchers, Carpet—
Cast Iron, Steel Points..... doz. 55¢ to 55x
Socket..... doz. \$1.75

Strops, Razor—
Smith & Hemenway Co..... 70x
Stuffers, Sausage—
Enterprise Mfg. Co..... 25x25x75x
National Specialty Mfg. Co., list Jan.
1, '97..... 30x

Tacks Brads, &c.—
List Jan. 15, '99.
Carpet Tacks, American 90¢ to 30x
American Cut Tacks..... 90¢ to 30x
Swedes Iron Tacks..... 90¢ to 30x
Swedes Upholsterers' Tacks.....
90¢ to 30x
Gimp Tacks..... 90¢ to 30x
Lace Tacks..... 90¢ to 30x
Trimmers' Tacks..... 90¢ to 30x
Looking Glass Tacks..... 70¢ to 10x
Bill Posters' and Railroad Tack.....
90¢ to 30x

Hungarian Nails..... 80¢ to 15x
Common and Patent Brads..... 80¢ to 15x
Trunk and Clout Nails..... 80¢ to 15x
NOTE—The above prices are for
Straight Weights. An extra 5% is given
Star Weights and an extra 10% is given
Standard Weights.

Miscellaneous—
Double Point Tacks..... 50¢ to 7 tens
Steel Wire Brads, R. & E. Mfg.
Co.'s list..... 50¢ to 10¢ 50x
See also Nails, Wire.

Tanks, Oil—
Emerald, S. S. & Co..... 30-gal. \$3.20
Emerald, S. S. & Co..... 60-gal. \$4.00
Queen City S. S. & Co., 0-gal..... \$3.50
Queen City S. S. & Co., 60-gal..... \$4.25

Tapes, Measuring—
American Ases' Skin..... 40¢ to 10¢ 50x
Patent Leather..... 25¢ to 30¢ 55x
Steel..... 40¢ to 10¢ 55x
Chesterman's..... 25¢ to 25¢ 55x
Eddy's Steel..... 40¢ to 10¢ 55x
Eddy's Metallic..... 33 1/2¢ to 33 1/2¢ 55x
Keutel & Esser Co. Steel and Metallic
Lower list, 1899..... 35x
Lufkin's Steel..... 33 1/2¢ to 33 1/2¢ 55x
Lufkin's Metallic..... 30x30x55x

Teeth Harrow—
Steel Harrow Teeth, plain or head-
ed, bas' per lb..... 25x4c

Thermometers—
Tin Case..... 90¢ to 10¢ 30¢ to 10¢ 55x
Ties, Bale—Steel,
Standard Wire..... 50¢ to 10¢ 55x
Ties, Wall—
Cleveland Wire Sp'ng Co.:
Galv. Steel 5 3/4 x 6 1/4 in. \$ 1000 \$10.00
Galv. Steel 5 3/4 x 8 1/4 in. \$ 1000 \$11.00
Galv. Steel 6 3/4 x 11 1/4 in. \$ 000 \$12.00
Galv. Steel 5 3/4 x 15 1/4 in. \$ 1000 \$14.00

Tinnners' Shears, &c.—
See Shears, Tinnners', &c.
Tinware—
Stamped, Japanned and Placed, sold
very generally at net prices.
Tire Benders, Upsetters,
&c.—See Benders and Upset-
ters, Tire
Tobacco Cutters—
See Cutters, Tobacco.

Tools—
Coopers'—
L. & I. J. White..... 20x30x55x
Saw—
Atkins' Cross Cut Saw Tools..... 40x
Simonds' Improved..... 35x45x
Simonds' Crescent..... 25x

Ship—
L. & I. J. White..... 25x
Transom Lifters—
See Lifters, Transom.
Traps—Fly—
Balloon, Globe or Acme.....
doz. \$1.15 to 1.25; gro. \$10.50 to 11.00
Harper, Champion or Paragon.....
doz. \$1.25 to 1.50; gro. \$12.00 to 12.50

Game—
Oneida Pattern..... 75¢ to 5¢ 75¢ to 10¢ 55x
Newhouse..... 45¢ to 45¢ 55x
Hawley & Norton..... 65¢ to 65¢ 10x
Victor (Oneida Pattern)..... 75¢ to 75¢ 55x
Star (Blake Pattern)..... 65¢ to 10¢ 70x55x

Mouse and Rat—
Mouse, Wood, Choker, doz. holes.....
85¢ to 90x
Mouse, Round or Square Wire.....
doz. \$0.85 to 1.00
American Pattern French Rat and Mouse
Traps:
No. 1, Detroit Marty Pattern, per doz.
\$4.50; in 1/4 gro. lots, per doz. \$4.00
No. 2, Detroit Marty Pattern, per doz.
\$1.25; in 1/4 gro. lots, per doz. \$3.90
Detroit Marty Pattern Mouse, per doz.
\$2.00; in 1/4 gro. lots, per doz. \$1.75
Diamond Joe Mouse Traps, per doz. 60x
Diamond Joe Rat Traps, per doz. \$1.00
Marty French Rat and Mouse Traps
(Genuine):
No. 1, Rat, Each \$1.12 1/2; per doz. \$12.00
No. 3, Rat, per doz. \$6.00; case of 50
\$2.95 doz.
No. 3 1/2, Rat, per doz. \$4.75; case of 72
\$4.25 doz.
No. 4, Mouse, per doz. \$3.50; case of 72
\$2.75 doz.
No. 5, Mouse, per doz. \$2.75; case of 72
\$2.25 doz.
Schuyler's Rat Killer, No. 1, per gr. \$30.00;
No. 2, per gr. \$30.00; Mouse, No. 3,
\$18.00..... 50x

Target—
Markle's, each..... 55x10
Trimmers, Spoke—
Bonney's Nos. 1 and 2..... 40x
Trowels—
Dixton Brick and Pointing..... 80x
Dixton Plastering..... 25x
Dixton "Standard Brand" and Gar-
den Trowels..... 40x
Never-Break Steel Garden Trowels.....
per doz. \$7.00
Peace's Plastering..... 30x
Rose Brick and Plastering..... 25x55x
Woodrough & McParlin, Plastering..... 25x

Trucks, Warehouse, &c.—
B. & L. Block Co.'s list..... 50x
Dalry Truck, Improved pattern.....
per doz. \$18.50
Model Stove Trucks..... per doz. \$18.50

Tubs, Wash—
No. 1 3 3
Galvanized, per doz. \$5.00 5 50 6.00
Galvanized Wash Tubs (S. S. & Co.):
No. 1 2 3 10 30 30
Per doz. \$5.25 6.00 6.75 6.50 7.25 8.00

Twine—
Miscellaneous—
Flax Twine—
No. 9, 14 and 1/4-lb. Balls..... 25¢ 25x
No. 12, 14 and 1/4-lb. balls..... 25¢ 25x
No. 15, 14 and 1/4-lb. Balls..... 15¢ 15x
No. 24, 14 and 1/4-lb. Balls..... 17 1/2¢
No. 35, 14 and 1/4-lb. Balls..... 15¢ 17x

Chalk Line, Cotton, 1/4-lb. Balls.....
25¢ to 25x4c
Cotton Mops, 6, 9, 12 and 15 lb. 10
doz..... 7x3c
Cotton Wrapping, 5 Balls to lb.....
according to quality..... 10x4¢ to 17x

American 2-Ply Hemp, 1/4 and 1/2-lb.
Balls..... 15¢ to 15x
American 3-Ply Hemp, 1-lb. Balls.....
15¢ to 15x
India 2-Ply Hemp, 1/4 and 1/2-lb.
Balls (Spring Twine)..... 54¢
India 3-Ply Hemp, 1-lb. Balls.....
54¢
India 3-Ply Hemp, 1 1/4-lb. Balls.....
7x 2, 3, 4 and 5-Ply Jute, 1/4-lb. Balls.....
9¢ to 10x
Mason Line, Linen, 1/4-lb. Balls.....
15¢
No. 25 Mattress, 1/4 and 1 1/4-lb. Balls.....
57¢
Wool.....
7x

Vises—
Solid Box..... 50x
Parallel—
Athol Machine Co.:
Simpson's Adjustable..... 40x
Standard..... 40x
Amateur..... 40x
Bonney's..... 40x
Fisher & Norris Double Screw..... 15x10x
Holland's.....
Mechanists'..... 40x
Key-tone..... 65x55x
Lewis Tool Co..... 20x30x
Massey's Perfect..... 15x30x
Massey's.....
Climber..... 80x40x
Combination, Quick Adj..... 40x
Woodworker's..... 15x30x
Merrill's..... 20x
Miller's Falls..... 50x10x105
Parker's.....
Victor..... 20x25x
Regulars..... 20x25x
Vulcan's..... 40x45x
Combination Pipe..... 55x60x
Frontiers..... 20x25x
Sargent's..... 40x
Snediker's X. L..... 20x25x
Stephens'..... 20x25x
Columbian Hdw. Co..... 40x

Saw Filers—
Bonney's No. 1, \$13; No. 3, \$16..... 50x
Dixton's D 3 Clamp and Guide, per doz.
\$30..... 25x
Reading..... 40x105
Wentworth's Rubber Jaw, Nos. 1, 2
and 3..... 45x50x

Miscellaneous—
Signal & Keeler Combination Pipe
Vise..... 60x
Parker's Combination Pipe:
87 Series..... 60x
187 Series..... 60x55x
No. 670..... 40x

Wads—Price Per M.
B. E., 11 up..... 60x
B. E., 9 and 10..... 70x
B. E., 8..... 80x
B. E., 7..... 80x
P. E., 11 up..... \$1.00
P. E., 9 and 10..... 1.25
P. E., 8..... 1.50
P. E., 7..... 1.50
Ely's B. E., 11 and larger..... \$1.70 to 1.75
Ely's P. E., 11 to 20..... \$3.00 to 3.15

Wagon Jacks—
See Jacks, Wagon.
Ware, Hollow—
Aluminum—
S. S. & Co. Reduced List..... 40x
Cast Iron, Hollow—
Stove Hollow Ware:
Ground..... 65x
Unground..... 70x
White Enamelled Ware:
Makin Kettles..... 75¢ to 10¢ 55x80x
Covered Ware:
Tinned and turned.....
40¢ to 10¢ 40x10x55x
Enamelled and Plain..... 50¢ to 50¢ 10x55x
See also Pots, Glue.

Enamelled—
Agate Nickel Steel Ware, list July '99,
35¢ to 10x
Granite Ware, list Jan. 1, '94, revised
Jan. 1, '95..... 40x105
L. & G. Opal Enamelled Ware..... 65x
Second Quality, Granite.....
70x10x70x10x105
Iron Clad Ware..... 70x10x
Never Break Enamelled..... 50x55x105

Tea Kettles—
Galvanized Tea Kettles:
Inch..... 6 7 8 9
Each..... 15c 50c 55c 65c
Steel Hollow Ware.
Avery Spiders & Griddles..... 65x55x55x
Avery Kettles..... 50x
Porcelain..... 60x55x10x
Never Break Spiders and Griddles.....
65x55x
Never Break Kettles..... 65x55x
Solid Steel Spiders & Griddles..... 65x55x
Solid Steel Kettles..... 60x
Solid Steel Ware, Enamelled..... 50x55x

Washboards—
Solid Zinc..... per doz.
Crescent, family size, bent frame..... \$3.00
Red Star, family size, stationary
protector..... \$3.00
Double Zinc Surface:
Baginaw Globe, fam', size, station-
ary protector..... \$2.65
Cable Cross, family size, stationary
protector..... \$2.90
Single Zinc Surface:
Nalad, family size, open back perfor-
ated..... \$2.40
Baginaw Globe, protector, family
size, ventilated back..... \$2.25

Brass Surface:
Brass King, Single Surface, open
back.....\$3.00
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface
.....\$3.00

Washers—
Leather, Axle—
Solid.....\$5.00 to \$5.50
Patent.....\$5.50 to \$6.00
Coil: 1/4 1 1/4 1 1/2 inch.
100 110 120 130 per 100
Iron or Steel—
Size bolt... 5-16 3/4 1/2 3/4 1
Washers... \$5.10 4.20 2.70 2.50
In lots less than one keg add 1/4c per
lb., 5-lb. boxes add 1/2c to list.
Cast Washer—
Over 1/2 inch, barrel lots, per lb.....
1 1/4c @ 1 1/4c

Washer Cutters—
See Cutters, Washer.

Washing Machines—
See Machines, Washing.

Water Coolers—
See Coolers, Water.

Wedges—
Oil Finish.....lb. \$2.00 to \$2.50
Weights, Sash
Per ton, f.o.b. factory.....\$19.00 to \$22.50

Some Foundries make price \$1 @ \$2
lower.

Well Buckets, Galvanized
See Pails, Galvanized.

Wheels Well—
8-in., \$1.65 to \$1.75; 10-in., \$2.00 to \$2.10;
12-in., \$2.50 to \$2.75; 14-in., \$3.25 to \$3.50

Wire and Wire Goods—
Brt. and Ann., 6 to 9, 70¢ to \$1.00
Brt. and Ann., 10 to 18, 72¢ to 74¢
Brt. and Ann., 19 to 26, 75¢ to 77¢
Brt. and Ann., 27 to 36, 75¢ to 77¢
Cop'd and Galv., 6 to 9, 70¢ to 72¢
Cop'd and Galv., 10 to 18, 70¢ to 72¢
Cop'd and Galv., 19 to 26, 70¢ to 72¢
Cop'd and Galv., 27 to 36, 70¢ to 72¢
Tinned, 6 to 14, 75¢ to 77¢
Tinned, 15 to 18, 70¢ to 72¢
Tinned, 19 to 26, 70¢ to 72¢
Tinned, 27 to 36, 65¢ to 70¢
Annealed Wire on Spools, 70¢ to 72¢
Brass and Copper Wire on Spools, 60¢ to 62¢
Brass, list Feb. 26, '96, 85¢

Copper, list Feb. 26, '96, 15¢
Cast Steel Wire.....50¢
Stub's Steel Wire.....\$5.00 to \$2.40¢
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—
List April 1, 1901.....55¢ to 10¢

Wire Cloth and Netting—
Galvanize 1 Wire Netting.....35¢ to 55¢
Painted Screen Cloth per 100 ft.....
\$1.00 to \$1.10

Light Hardware Grade:
8-18 Mesh, Plain (Sc. list) sq. ft.....
14¢ to 19¢
8-18 Mesh, Galv. (Sc. list) sq. ft.....
24¢ to 29¢

Wire Barb—See Trade Report.

Wire, Rope—See Rope, Wire.

Wrenches—
Agricultural.....70¢ to 10¢ to 75¢
Case lots.....75¢ to 10¢
Acme.....60¢ to 10¢
Alligator.....70¢
Baxter's S.....60¢ to 10¢
Bemis & Co. S.....70¢
Adjustable S.....35¢ to 5¢
Adjustable S Pipe.....40¢
Brigg's Pattern.....30¢ to 10¢

Combination Black.....40¢ to 5¢
Combination Bright.....40¢
Cylinder or Gas Pipe.....55¢
Extra Heavy.....45¢
Merrick's Fastener.....50¢
No. 3 Pipe, Bright.....55¢
Rindley Automatic.....50¢
Boarman's.....38¢ to 45¢
Coe's Genuine.....40¢ to 10¢ to 5¢
Coe's "Mechanics".....40¢ to 10¢ to 5¢
Donohue's Engineer.....40¢ to 10¢
Eagle.....50¢ to 10¢
Gem Pocket.....30¢
Hercules.....70¢
Knife Hand's, Machinists' (W. & B.)
Case lots.....50¢ to 10¢
Less than case lots.....50¢ to 10¢
Improved Pipe (W. & B.).....50¢ to 10¢
Solid Handles, P. S. & W.....50¢ to 10¢
Triumph.....60¢ to 10¢

Wrought Goods—
Staples, Hooks, &c., list March 17
'92.....35¢ to 55¢ to 90¢

Yokes, Neck—
Covert Saddlery Works, Trimmed, 1.60 to 2.50
Covert Saddlery Works, Neck Yoke
Centers.....70¢

Yokes, Ox, and Ox Bows—
Fort Madison's Farmers & Freighters'.....
list net

Zinc—
Sheet.....lb 6 1/4c to 7 1/4c

PAINTS, OILS AND COLORS.—Wholesale Prices.

White Lead, Zinc, &c.
Lead, Foreign white, in Oil.....7 1/2c to 9 1/2c
Lead, American White, in Oil:
Lots of 500 lb or over.....6 1/2c
Lots less than 500 lb.....7c
Lead, White, in Oil, 25 lb tin
pails, add to keg price.....3 1/2c
Lead, White, in Oil, 12 1/2 lb tin
pails, add to keg price.....1c
Lead, White, in Oil, 1 to 5 lb as-
sorted tins, add to keg price.....1 1/4c
Lead White, Dry in bbls.....5 1/4c to 6c
Lead, American, Terms: On lots of 500
lbs. and over, 60 days, or 25 for cash if
paid in 15 days from date of invoice.

Zinc, American, dry.....7 1/2c to 4 1/2c
Zinc, Paris, Red Seal, dry.....6c to 7c
Zinc, Paris, Green Seal, dry.....6c to 7c
Zinc, Antwerp, Red Seal, dry.....6c to 7c
Zinc, Antwerp, Green Seal, dry.....6c to 7c
Zinc, V. M. French, in Poppy Oil,
Green Seal:
Lots of 1 ton and over.....12c to 12 1/2c
Lots of less than 1 ton.....12 1/2c to 13c
Zinc, V. M. French, in Poppy Oil,
Red Seal:
Lots of 1 ton and over.....10 1/2c to 11 1/2c
Lots of less than 1 ton.....11 1/2c to 12c
Discounts.—V. M. French Zinc.—Dis-
counts to buyers of 10 bbl. lots of one or
assorted grades, 15; 25 bbls., 25; 50
bbls., 45.

Dry Colors.
Black, Carbon.....7 1/2c to 8c
Black, Drop, Amer.....7c to 7 1/2c
Black, Drop, Eng.....7c to 7 1/2c
Black, Ivory.....12c to 13c
Lamp, Cam.....4 1/2c to 5c
Blue, Celestial.....4c to 4 1/2c
Blue, Chinese.....30c to 35c
Blue, Prussian.....28c to 34c
Blue, Ultramarine.....4c to 4 1/2c
Brown, Spanish.....14c to 15c
Brown, Vandyke, Amer.....34c to 36c
Brown, Vandyke, Foreign.....34c to 36c
Carmine, No. 40.....\$23.00 to \$27.00
Green, Chrome, ordinary.....8c to 9c

Green, Chrome, pure.....16c to 20c
Lead, Red, bbls. 1/2 bbls. and kegs:
Lots 500 lb or over.....6c
Lots less than 500 lb.....6 1/2c
Litharge, bbls. 1/2 bbls. and kegs:
Lots 500 lb or over.....6c
Lots less than 500 lb.....6 1/2c
Ocher, French Washed.....14c to 15c
Ocher, Dutch Washed.....14c to 15c
Ocher, American.....\$10.00 to \$15.00
Orange Mineral, English.....8c to 11 1/2c
Orange Mineral, French.....8c to 11 1/2c
Orange Mineral, German.....8c to 11 1/2c
Orange Mineral, American.....8c to 11 1/2c
Red, Indian, English.....4 1/2c to 5c
Red, Indian, American.....3c to 3 1/2c
Red, Turkey, English.....4c to 5c
Red, Tuscan, English.....7c to 10c
Red, Venetian, Amer.....\$100 to \$150
Red Venetian, English.....\$100 to \$150
Sienna, Italian, Burnt and
Powdered.....3 1/2c to 7 1/2c
Sienna, Ital., Raw, Powd.....3 1/2c to 7 1/2c
Sienna, American, Burnt and
Powdered.....1 1/2c to 3c
Talc, French.....\$100 to \$125 to \$150
Talc, American.....90c to \$1.00
Terra Alba, French.....\$100 to \$125 to \$150
Terra Alba, English.....35c to \$1.00
Terra Alba, American No. 1.....35c to \$1.00
Terra Alba, American No. 2.....45c to \$1.00
Umber, Turkey, Bnt. & Powd.....2 1/2c to 3 1/2c
Umber, Turkey, Raw & Powd.....2 1/2c to 3 1/2c
Umber, Bnt. Amer.....1 1/2c to 2c
Umber, Raw, Amer.....1 1/2c to 2c
Yellow, Chrome.....10c to 12c
Vermilion, American Lead.....10c to 12c
Vermilion, Quicksilver, bulk.....40c to 70c
Vermilion, Quicksilver, bags.....40c to 70c
Vermilion, English, Import.....50c to 95c
Vermilion, Chinese.....\$1.05 to \$1.20

Colors in Oil.
Black, Lampblack.....12c to 14c
Black, Chinese.....38c to 40c
Blue, Prussian.....32c to 38c
Blue, Ultramarine.....13c to 16c

Brown, Vandyke.....9 1/2c to 12c
Green, Chrome.....10c to 12c
Green, Paris.....34c to 36c
Sienna, Raw.....10c to 13c
Sienna, Burnt.....10c to 13c
Umber, Raw.....9 1/2c to 12c
Umber, Burnt.....9 1/2c to 12c

Miscellaneous.
Barytes, Foreign, # ton.....\$19.00 to \$21.00
Barytes, Amer. floated.....19.00 to 20.00
Barytes, Crude, No. 1.....9.00 to 10.00
Chalk, in bulk.....\$ ton 2.80 to 2.75
Chalk, in bbls.....\$ 100 3c to 35c
China Clay, English, # ton 12.00 to 17.50
Cobalt, Oxide, # 100 lb 2.30 to 2.50
Whiting, Common, # 100 lb 40c to 50c
Whiting, Gliders.....45¢ to .65
Whiting, extra Gliders.....55¢ to .85

Putty.
In bladders.....\$2.25
In butts.....1.50
In cans 12 lb to 25 lb.....2.25

Spirits Turpentine.
In Southern bbls.....30¢ to 37¢
In machine bbls.....37¢ to 47¢

Glue.
Cabinet.....11 1/2c to 12c
Extra White.....15c to 23c
French.....12c to 14c
Irish.....13 1/2c to 14c
Low Grade.....9c to 13c
Medium White.....14 1/2c to 16 1/2c

**Animal, Fish and Veget-
table Oils.**
Linsed, City, raw.....\$ gal. 82¢ to 83¢

Linsed, City, boiled.....\$4 to 55
Linsed, State and West's raw 80¢ to 81¢
Linsed, raw Calcutta seed.....85¢
Lard, Prime.....60¢ to 70¢
Lard, Extra No. 1.....50¢ to 52¢
Lard, No. 1.....43¢ to 44¢
Cotton-seed, Crude.....
Cotton-seed, Summer Yellow,
prime.....38 1/2c to 39c
Cotton-seed Summer Yellow,
off grades.....37c to 37 1/2c
Sperm, Crude.....3c
Sperm, Natural Spring.....3c
Sperm, Bleached Spring.....61c to 62c
Sperm, Natural Winter.....61c to 62c
Sperm, Bleached Winter.....64c to 65c
Whale, Crude.....3c
Whale, Natural Winter.....45c
Whale, Bleached Winter.....47c
Menhaden, Crude, Sound.....23c to 24c
Menhaden, Light Strained.....29c to 30c
Menhaden, Bleached Winter.....31c to 32c
Menhaden, Ex Bleached Winter 34c to 35c
Hallow, prime.....53c to 55c
Cocoanut, Ceylon.....7c to 7 1/2c
Cocoanut, Cochiti.....32c to 33c
Cod, Newfoundland.....34c to 35c
Red Elaine.....34c to 35c
Red Saponified.....\$ 4 1/2c to 5c
Olive, Italian, bbls.....57c to 63c
Neatsfoot, prime.....52c to 53c
Palm, prime, Lagos.....\$ 5 1/4c to 5 1/2c

Mineral Oils.
Black, 20 gravity, 25 to 30 cold
test.....\$ gal. 9 1/4c to 10 1/4c
Black, 20 gravity, 15 cold test, 10 1/4c to 11 1/4c
Black, summer.....9 1/4c to 9 1/2c
Cylinder, light filtered.....14 1/4c to 17 1/4c
Cylinder, dark filtered.....12 1/4c to 13 1/4c
Paraffine, 903-907 gravity.....11 1/4c to 11 1/2c
Paraffine, 903 gravity.....11 1/4c to 11 1/2c
Paraffine, 883 gravity.....9 1/4c to 10c
Paraffine, red, No. 1.....12 1/4c to 12 1/2c
In small lots 1/2c advance.

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